CLINICAL LOOKING GLASS®

Special Topics

Version 11

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8/13/2015

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Guidance

After today's class you will have completed the curriculum for basic competency, will be able to pass the basic competency exam, and will be ready to undertake your own education.

CLG Information is both broad and deep. The manuals cover most of its capability but can be daunting without a guide.

I have collected in this section "Special Topics", those topics most commonly used by new users so you will have available to you, once you have mastered them some of the techniques your colleagues have found useful in their analytic efforts at Montefiore. Consider this your next challenge for self-study.

Review with Students:

1. Rules for test taking. You can help your fellow students by pointing out mistakes and giving hints but do not give answers. CLG is a collaborative tool for a collaborating community.

2. Time notions - When in calendaric, Within index date, When in event duration.

3. Index Event Line pointing to line one or line two important to determining which event's attribute will be available through the browse method or group list method. This highlights the importance of editing the index event line.

4. Important notion of Event Collection and how it differs from cohort (next section).

Event Collection

Tutorial 26: Event Collection vs Cohort Admissions (all)
https://www.youtube.com/watch?v=3Ss0lwu7G8M

So far we have learned to create cohorts. We have a group of medical record numbers where each medical record number is represented only once. We got these medical record numbers by finding an event (one per person) and we used that singleton event's date time and the patient's mrn to define the member of the cohort.

But suppose, instead of wanting a group of unique medical record numbers, we wanted a group of events. As an example, suppose we wanted to look at all the hospital admissions in 2010 that had another hospital admission within a year. If we record the mrn of each of these hospital admission, we may find that some people are represented more than once. i.e. the patient was admitted, then readmitted, and then readmitted again all within the span of one year. The second admission would qualify the first for inclusion and the third admission would qualify the second for inclusion.

A collection of medical record numbers where the medical record numbers are not unique is called an "event collection".

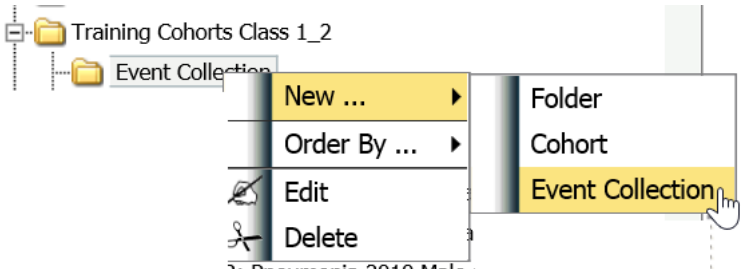
You build an "event collection" when you are interested in events not in unique individuals, but you still need the mrn to force the events to have a natural relationship to other events, i.e. only events belonging to the same person can be used to qualify events for inclusion in the event collection.

First let us build all hospital discharges for males older than age 65.

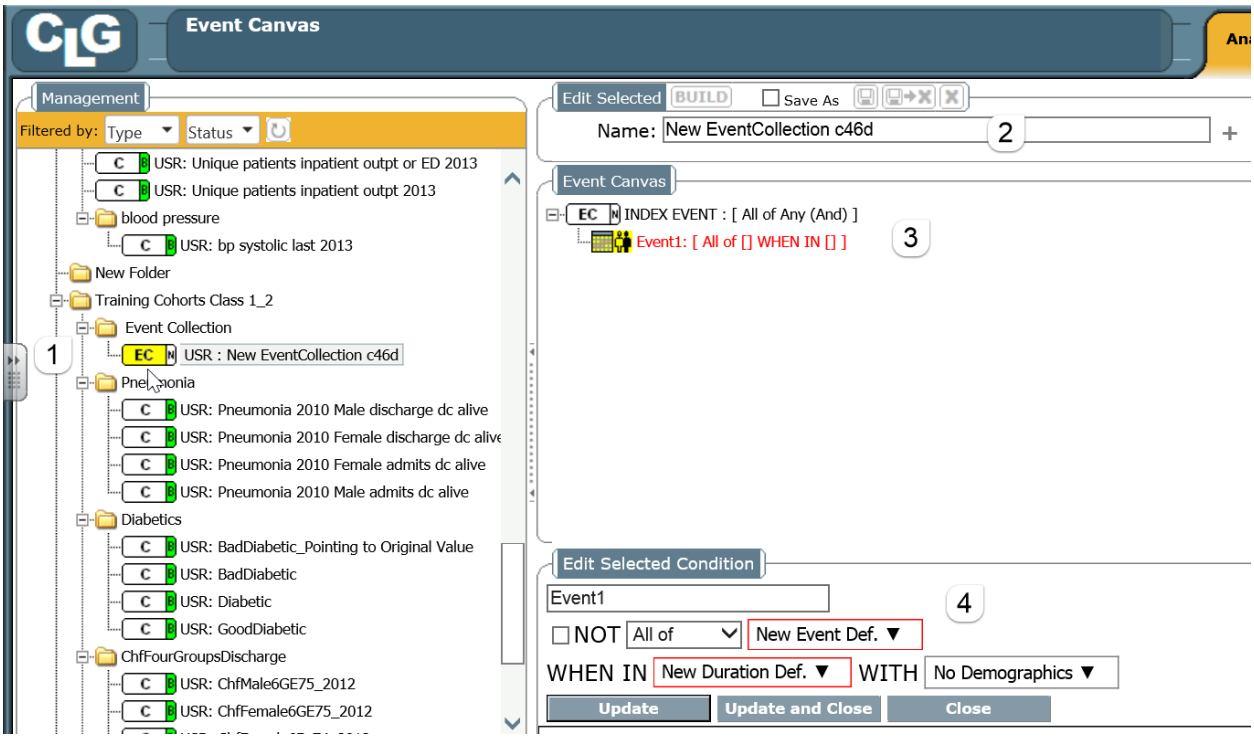
This is relatively simple. You have in the past learned how to build the first (earliest) discharge, the only difference now is that instead of building a cohort, your are building an event collection. Instead of choosing earliest in the index event line, you choose all.

Let's go through the steps.

1. First, create an event collection:



An event collection opens up on the event canvas:



1 – on the management pane you see an “event collection” appear in yellow. Note the “EC” as opposed to the “C” of the cohort

2- a place appears that allows you to enter the name of the event collection

3- the skeleton of the Event collection appears in the event canvas. Note the word “all” in the index event line. This is the feature that distinguishes the event collection from cohort.

4- The GUI Editor, “Edit selected condition, appears below the event canvas to allow you to enter the criteria that will be painted on the event canvas. This is exactly the same gui editor as you saw in the cohort building process with the same capabilities except in the Event Collection, the index event line is allowed “all” in addition to “earliest” and “latest: while in the cohort build the Index Event line is only allowed earliest or latest. In the cohort build, the Index Event line

forces a singularity of result per mrn by allowing only earliest or latest. While the condition lines on the canvas can be "all, earliest, or latest", it is the Index Event line that has the restriction. It is the index event line that enforces the singularity – the uniqueness of mrn in the resulting group.

To restate and amplify:

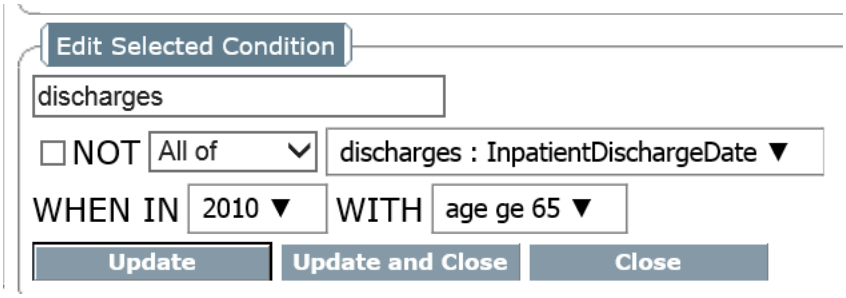
- Both cohorts and Event Collections are groups of mrn-date:time combinations.
- Both cohorts and event collections are qualified by events related to each other through temporal rules and logical "and", "or", and "subgroups".
- A group called a cohort has an mrn only once.
- A group called an event collection can have the same mrn multiple times. What is unique in the event collection is not the mrn but rather the mrn-date:time combination. The dyad of MRN and date:time is unique in the event collection.

Now let,

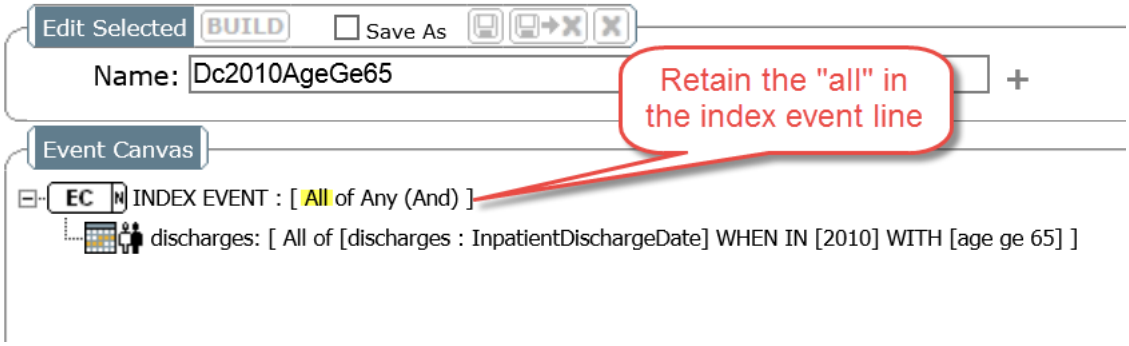
Let's continue our build:

2. Name the event collection – Dc2010AgeGe65
3. Build the event collection:
   a. Event: discharges
      i. Discharged alive meaning disposition not equal to expired
   b. Duration 1/1/10 – 1/1/11 not included on right
   c. Age >= 65

The gui editor now looks like this:



When you update and close the event canvas looks like this:


Edit Selected
BUILD
Save As
Name: Dc2010AgeGe65
Retain the "all" in the index event line
Event Canvas
EC
N
INDEX EVENT : [All of Any (And)]
discharges: [All of [discharges : InpatientDischargeDate] WHEN IN [2010] WITH [age ge 65]]

a. Retain the index event line as “all” (this is what makes this group an event collection. We will now get all the hospital admissions in the year 2010 of people aged 65 or greater.

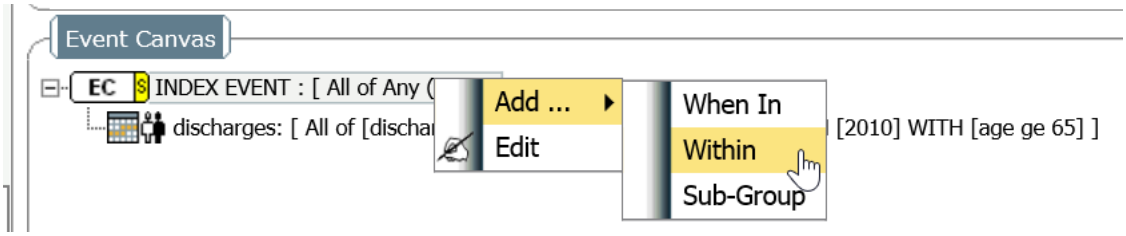
N = 28,959 admissions discharged alive.

Now we want to know, how many of these admissions in 2010 actually had a readmission 30 days after the first.

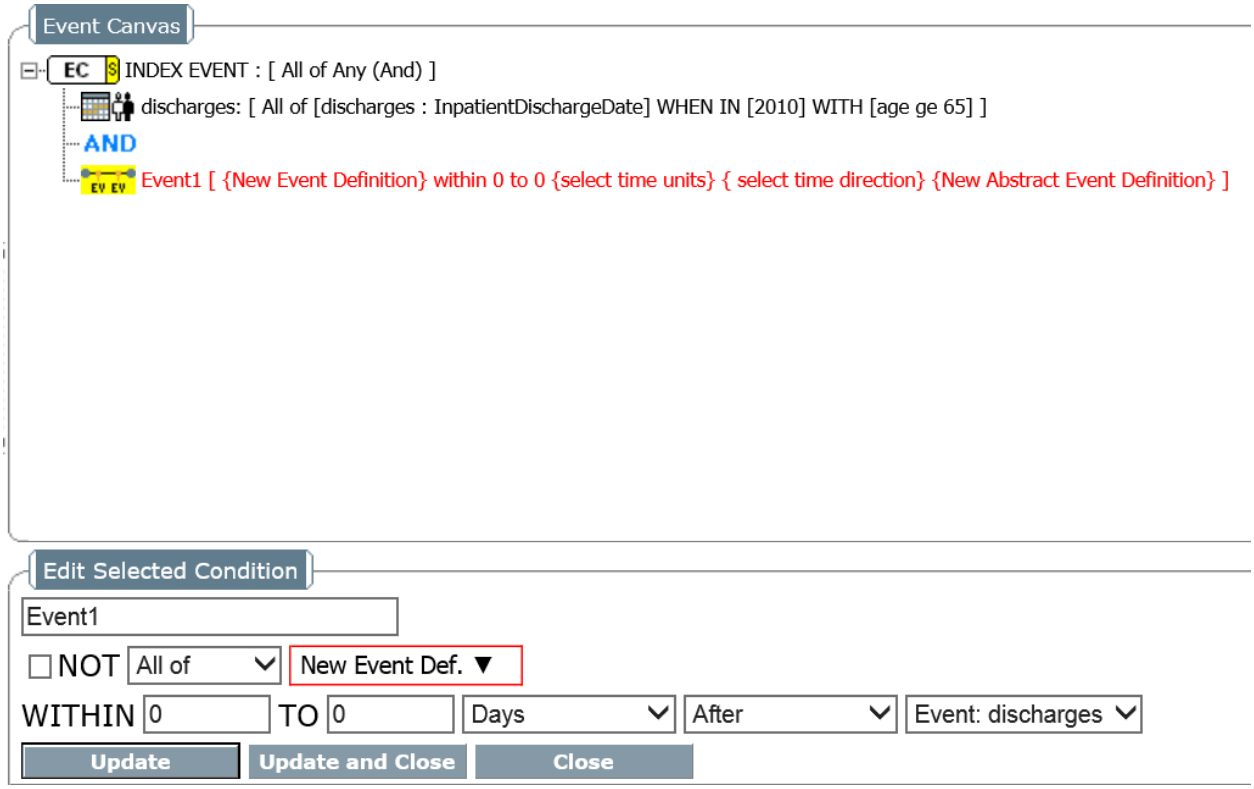
You know how to do this. You use a within condition demanding that there is another admission within 0 to 30 days of the discharge.

The steps follow:

1. Hover over the index event line
2. Right click to get the menu
3. Left click on add condition/within

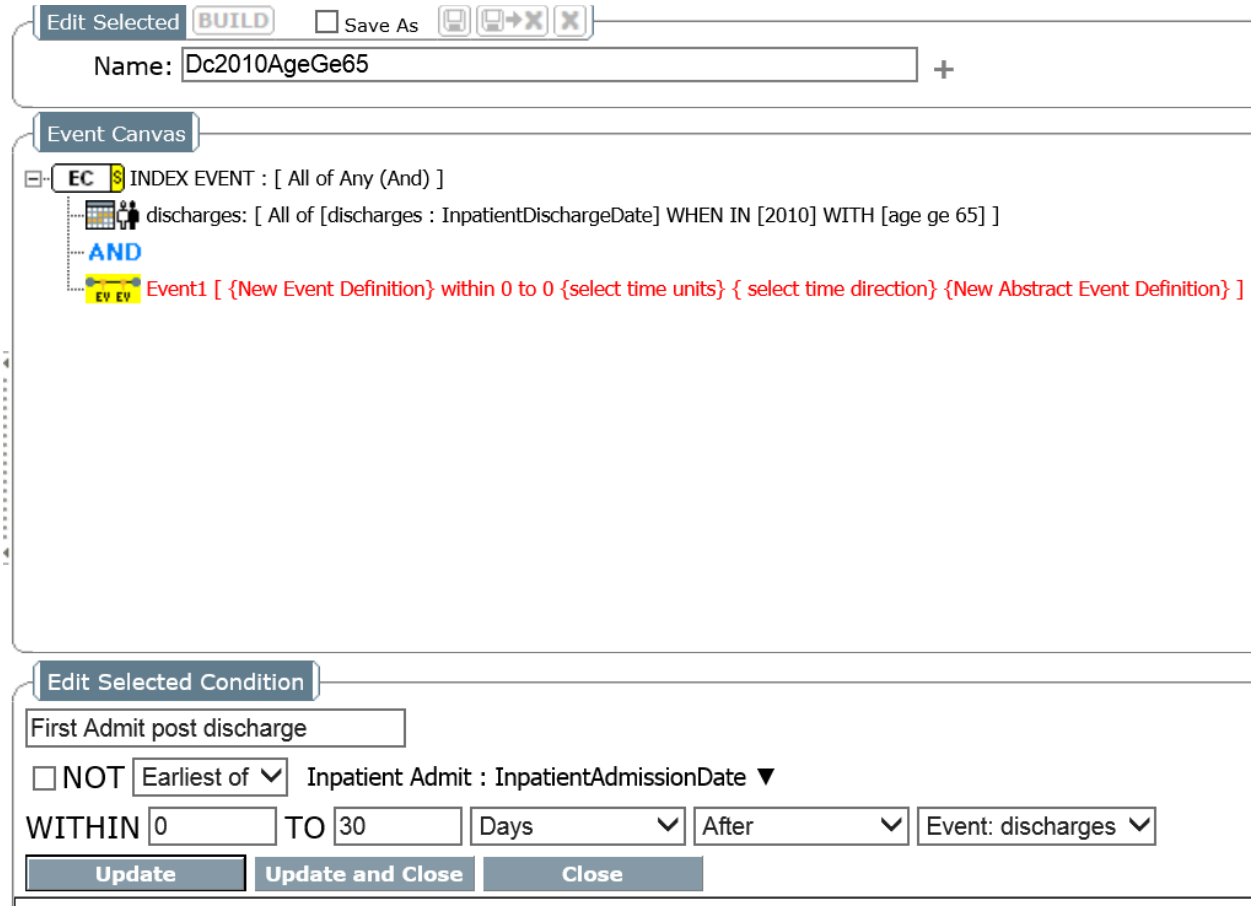


4. This now results in the following on the event canvas and gui editor below

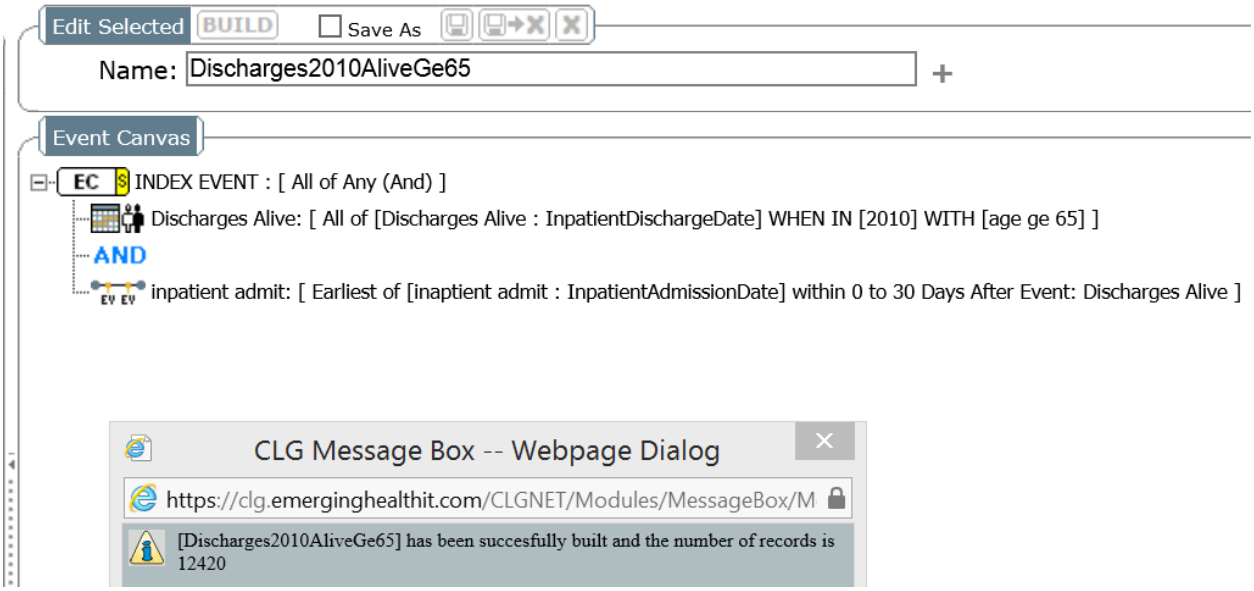


5. Put in the requirements
    a. Name the condition line: First Admit post dischargeNew Event Definiiton: Inpatient admit
    b. Change the all in the gui to “earliest” as I want the first readmission not all the downstream readmissions.
    c. Within 0 to 30 days

The gui editor now looks like this:



Now, Update and Close and the conditions in the GUI editor are painted onto the Event Canvas.


Edit Selected
BUILD
Save As
Name: Discharges2010AliveGe65
Event Canvas
EC
INDEX EVENT : [All of Any (And)]
Discharges Alive: [All of [Discharges Alive : InpatientDischargeDate] WHEN IN [2010] WITH [age ge 65]]
AND
inpatient admit: [Earliest of [inaptient admit : InpatientAdmissionDate] within 0 to 30 Days After Event: Discharges Alive]
CLG Message Box -- Webpage Dialog
https://clg.emerginghealthit.com/CLGNET/Modules/MessageBox/M
[Discharges2010AliveGe65] has been succesfully built and the number of records is 12420

N= 12,420

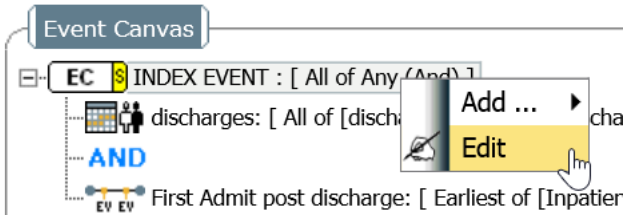
But what is this 12, 420? When you had a cohort, it was really simple. The 12,420 would have been unique people and those people identified by the condition line, to which the index event line pointed.

In the event collection, we have an index line that points to “All of Any”.

This means that it is counting the mrn-date:time of condition line one (discharges) and condition line 2 (First admit post discharge).

If you wanted only the hospitalizations that had a subsequent readmission in 30 days, then you should have had your index event line pointing to the first line discharges. These are the discharges that had a readmit in 30 days.

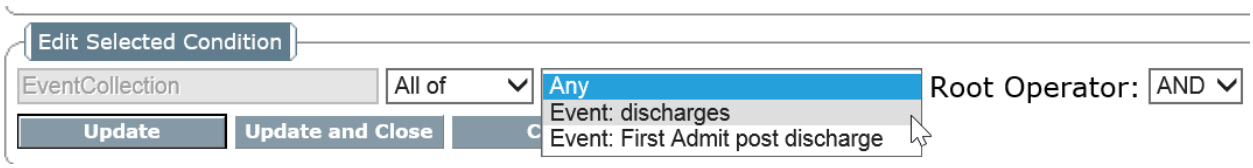
To achieve this, hover over the Index event line, and right click.

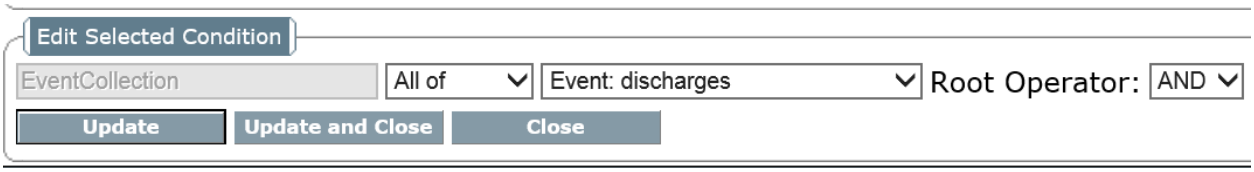


A menu appears, choose edit (left click edit)

A gui editor for the index event line appears below the event canvas

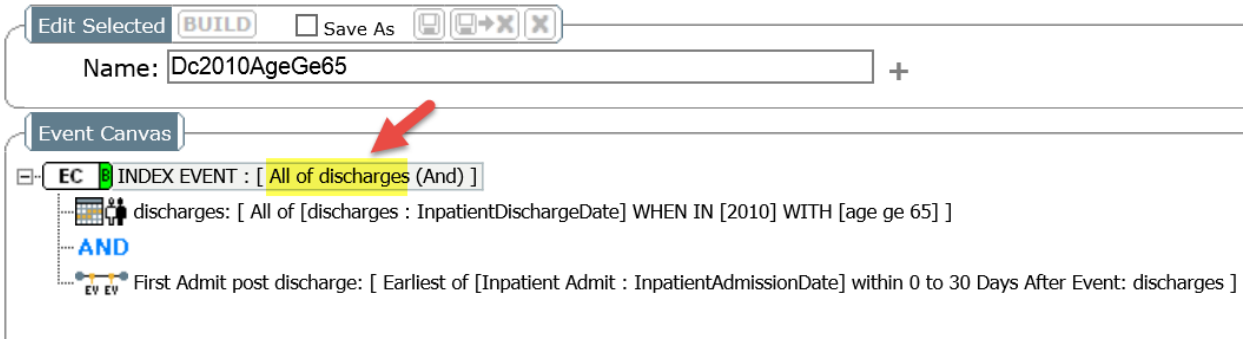
Now modify the all of any to be all of “discharges”





Update and close

The event canvas would have looked like this:


Edit Selected
BUILD
Save As
Name:
Dc2010AgeGe65
Event Canvas
EC
INDEX EVENT : [All of discharges (And)]
discharges: [All of [discharges : InpatientDischargeDate] WHEN IN [2010] WITH [age ge 65]]
AND
First Admit post discharge: [Earliest of [Inpatient Admit : InpatientAdmissionDate] within 0 to 30 Days After Event: discharges]

Now build

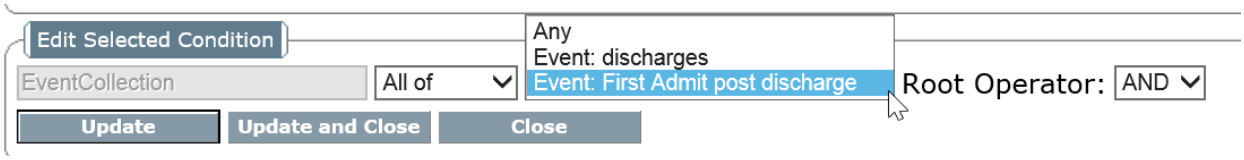
N= 6,200

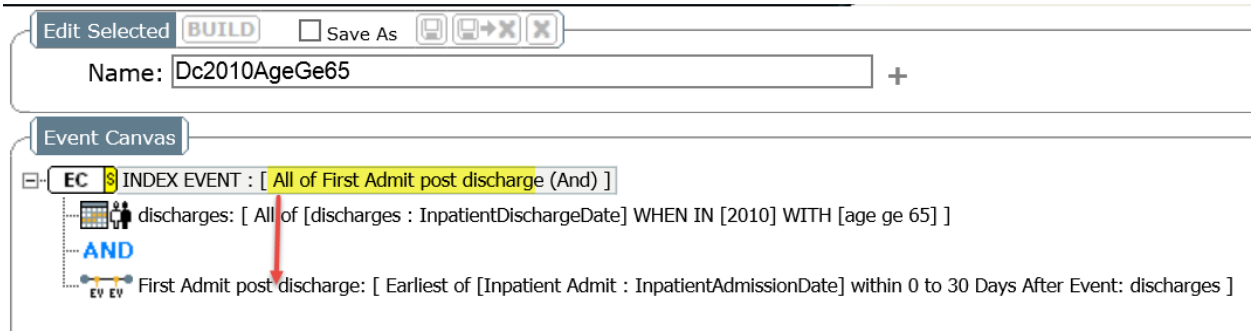
There were 6,200 admissions of 65 year olds or older who had a subsequent admission within 30 days of the discharge.

The result is N=…..

This is the number of discharges in 2010 that have a repeat admission within 30 days. When you browse this event collection, you will see the details of those discharges.

If, instead, you want to browse the information on those hospitalizations that occurred within 30 days of the previous discharge, then you have to edit the Index event line and point to the “First admit post discharge line”, rebuild the event collection, and then browse the rebuilt event collection.




Edit Selected
BUILD
Save As
Name:
Dc2010AgeGe65
Event Canvas
EC
INDEX EVENT : [All of First Admit post discharge (And)]
discharges: [All of [discharges : InpatientDischargeDate] WHEN IN [2010] WITH [age ge 65]]
AND
First Admit post discharge: [Earliest of [Inpatient Admit : InpatientAdmissionDate] within 0 to 30 Days After Event: discharges]

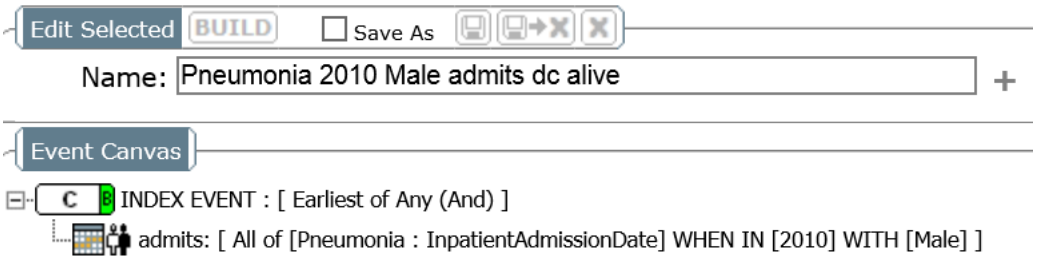
Resulting in at build: N= 6,200 the same number as before, but now we are pointing to the “First admit post discharge” and when you browse this group, you will get information on the readmission not the original admission.

Event collections answer different questions from the cohorts. You must be careful to understand what your index event line is pointing to and what it is actually counting.

How to convert a cohort to an Event Collection

(Useful Trick - with a warning)

Suppose you start with a familiar cohort.

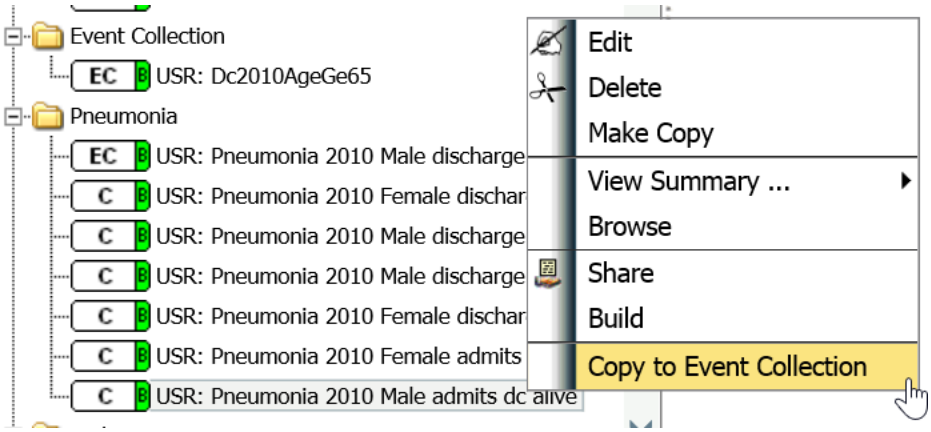

Edit Selected
BUILD
Save As
Name:
Pneumonia 2010 Male admits dc alive
Event Canvas
C
INDEX EVENT : [Earliest of Any (And)]
admits: [All of [Pneumonia : InpatientAdmissionDate] WHEN IN [2010] WITH [Male]]

This is a cohort so we have the first admission per patient with each patient only admitted once.

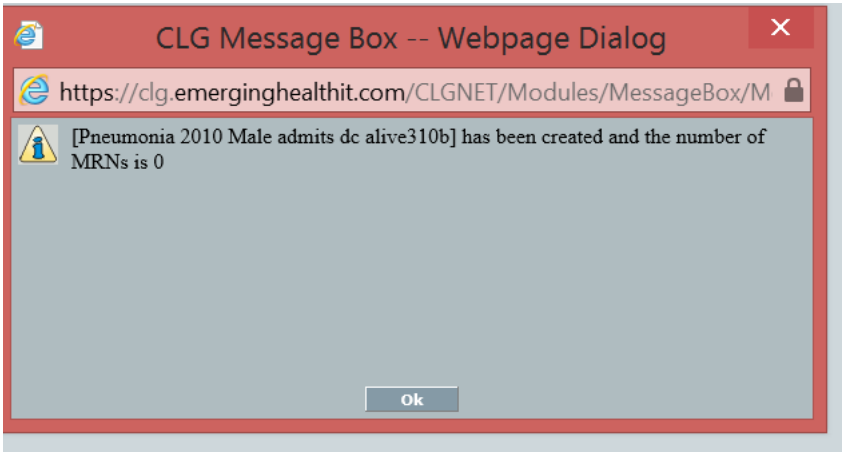
Suppose we wanted to look at all the Male pneumonia patients in 2010 where the patient was discharged alive. How can we convert this cohort (Earliest of Any) into an All.

Of course, we could always build the event collection from scratch. But, you can not change the index line from earliest to all. So I will now show you how to change the cohort object into an event collection object.

Go to the management pane, hover over the cohort, and right click to obtain the menu, and left click on Copy to Event Collection.

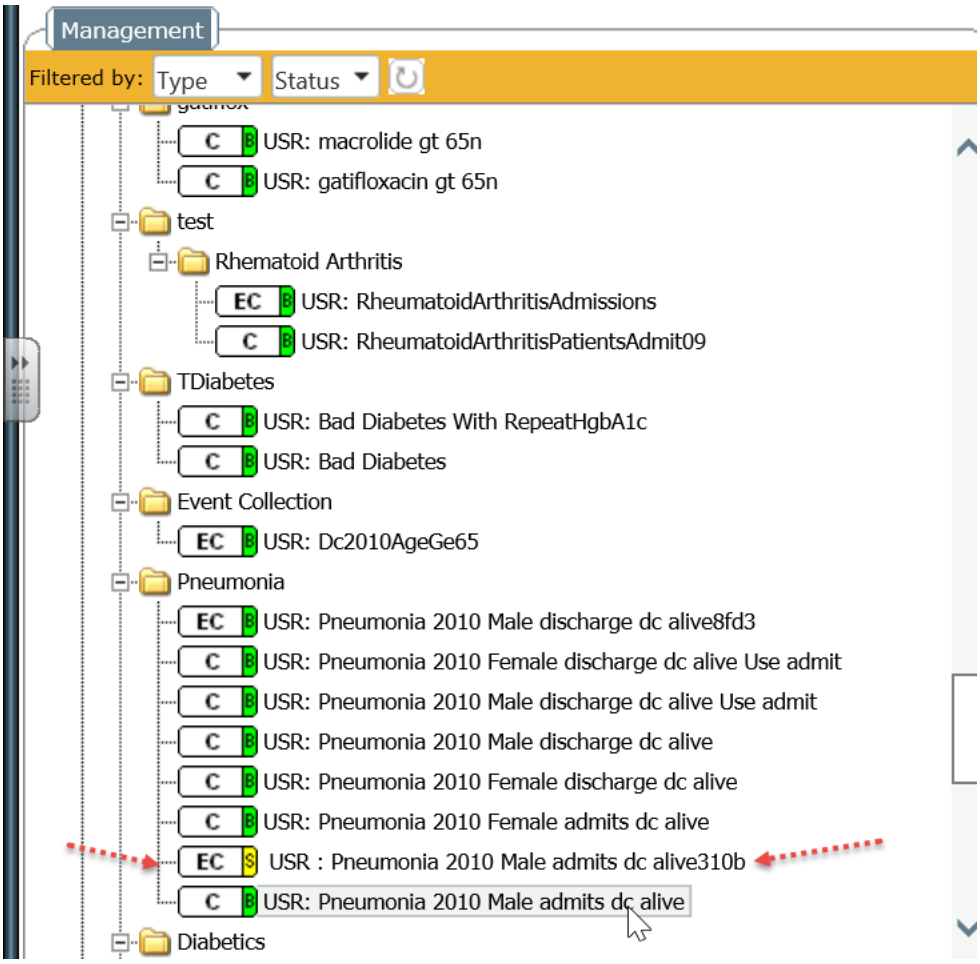


Left click on Copy to Event Collection.


CLG Message Box -- Webpage Dialog
https://clg.emerginghealthit.com/CLGNET/Modules/MessageBox/M
[Pneumonia 2010 Male admits dc alive310b] has been created and the number of MRNs is 0
Ok

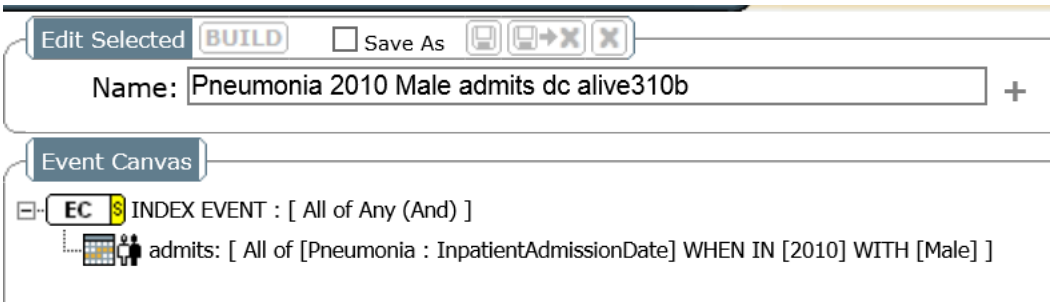
The event collection appears in the management pane with the prefix EC.

Note, all that has happened is that the event collection rules have been built. The actual event collection itself made up of medical records numbers has not yet been built as you can see the mrn number is zero.


Management
Filtered by:
Type
Status
C B USR: macrolide gt 65n
C B USR: gatifloxacin gt 65n
test
Rhematoid Arthritis
EC B USR: RheumatoidArthritisAdmissions
C B USR: RheumatoidArthritisPatientsAdmit09
TDiabetes
C B USR: Bad Diabetes With RepeatHgbA1c
C B USR: Bad Diabetes
Event Collection
EC B USR: Dc2010AgeGe65
Pneumonia
EC B USR: Pneumonia 2010 Male discharge dc alive8fd3
C B USR: Pneumonia 2010 Female discharge dc alive Use admit
C B USR: Pneumonia 2010 Male discharge dc alive Use admit
C B USR: Pneumonia 2010 Male discharge dc alive
C B USR: Pneumonia 2010 Female discharge dc alive
C B USR: Pneumonia 2010 Female admits dc alive
EC S USR : Pneumonia 2010 Male admits dc alive310b
C B USR: Pneumonia 2010 Male admits dc alive
Diabetics

Notice how the Event Collection object is yellow in the management pane:

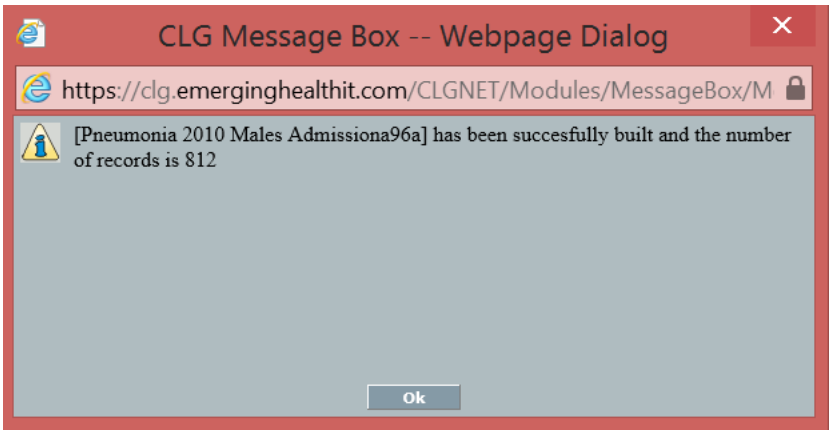
Let's edit the Event Collection and see what it looks like.


Edit Selected
BUILD
Save As
Name:
Pneumonia 2010 Male admits dc alive310b
Event Canvas
EC
INDEX EVENT : [All of Any (And)]
admits: [All of [Pneumonia : InpatientAdmissionDate] WHEN IN [2010] WITH [Male]]

Warning!!! Make sure the first condition line says "All". The "Copy to Event Collection" command only alters the "Index Event Line". If the first condition line says "Earliest" or "Latest" you will have to manually alter it.

Notice how the index event line now says all.

Left click on build:


CLG Message Box -- Webpage Dialog
https://clg.emerginghealthit.com/CLGNET/Modules/MessageBox/M
[Pneumonia 2010 Males Admissiona96a] has been succesfully built and the number of records is 812
Ok

The EC is now green:

The original cohort had 762 people. So this means in 2010 there were 762 unique males who were admitted with pneumonia and discharged alive. There were 812 admissions of these males with a diagnosis of pneumonia and discharged alive. So in the same year some of these men came back to the hospital with a pneumonia diagnosis and were discharged from their subsequent admissions alive.

Warning!!!

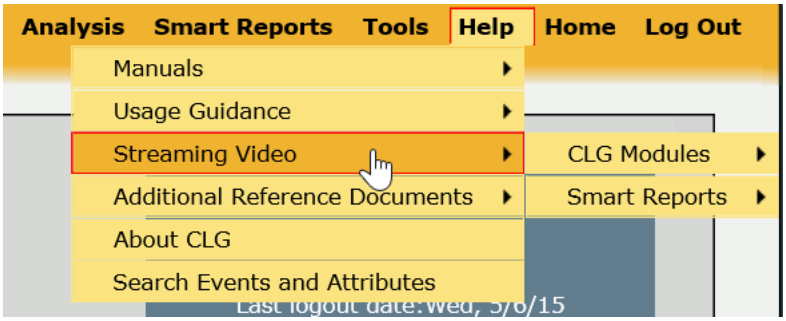
Whenever you convert a cohort to an Event collection, look closely at the Index Event Line and make sure it is pointing to the line you actually want and therefore answering the question of your interest. Also make sure your condition lines are properly identifying Earliest, Latest, or All.

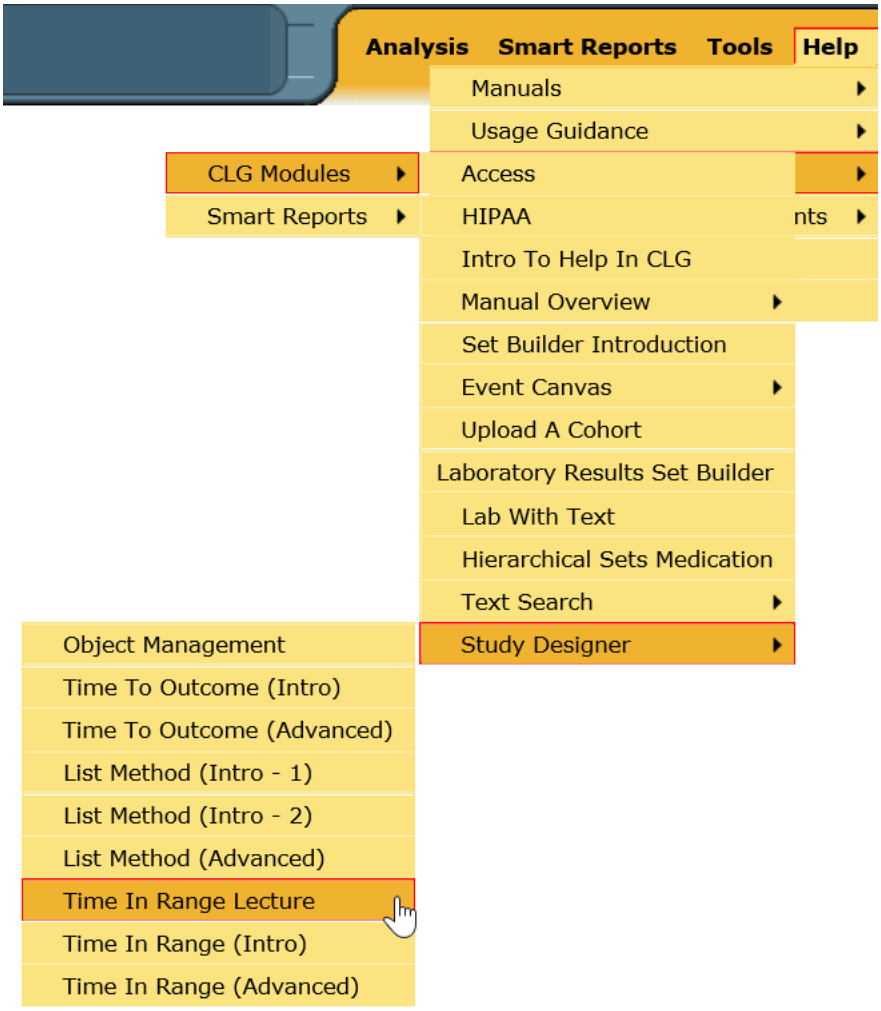
Time in Range - The third Analytic Pattern in Study Designer

How to summarize values in a continuous variable drawn repeatedly in the course of clinical care

Tutorial 27: Summarizing a Continuous variable sampled repeatedly in the course of clinical care: The time in Range Method
https://www.youtube.com/watch?v=flZckS9Jm4A

Watch Streaming video:





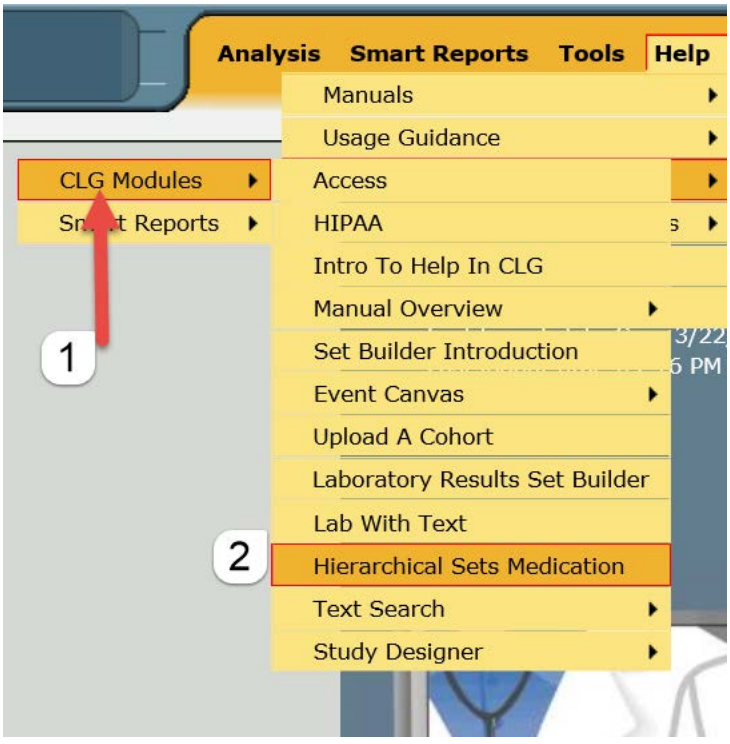
1. Watch the three videos: time in Range Lecture, Time in Range (Intro), Time in Range (Advanced)
2. Read the CLG User manual 573-633

Self Teaching Exercise: Learn how to create medication sets and use them to solve a question.

Tutorial 28: Medication Set building Find/Explore

2. Watch Streaming video

Help\Streaming Videos\CLG Modules\ **Hierachical Set Medication**



Watch Video Hierarchical Set medications so you can build a set with medications.

Then find the number of children age LT 18 in year 2012 at Montefiore who are prescribed in the outpatient an aerosol steroid in 2012. Build the cohort See 1,2 below for helpful clues.

Hints; demographic is age less than 18; event type is Prescription

Note:

prescriptions are medications in the outpatient;

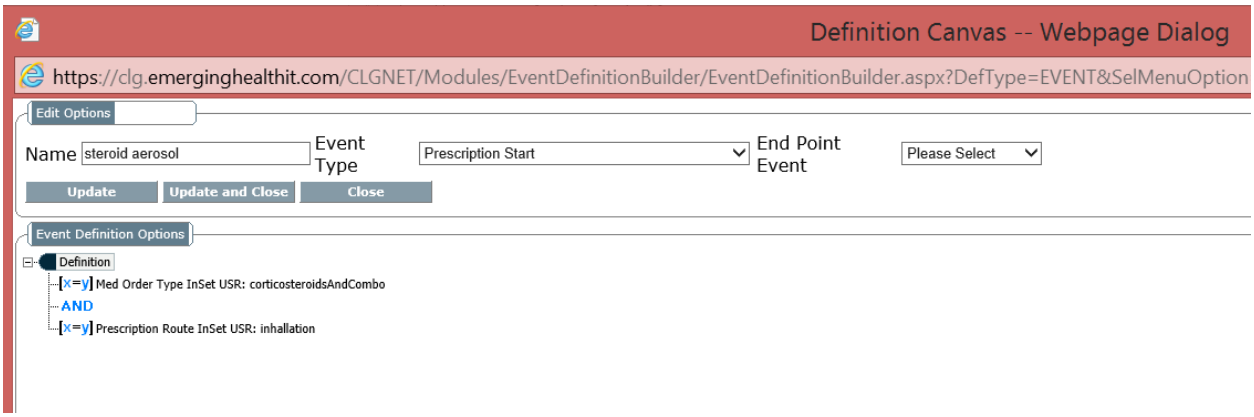
med orders are medications that have been ordered in the hospital,

InternMedAdmin Date are the actual meds that were administered in hospital)

All three events can use the same medication sets.

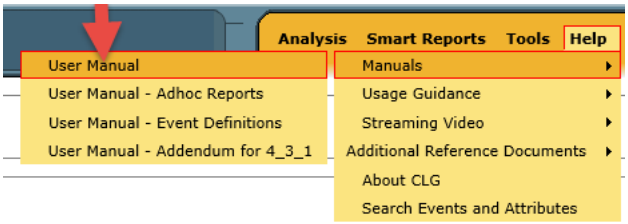
Read in Event Definition manual (volume 3) Chapter 8 P. 89 -97. Medication/Prescription

In the process of the build you will be building on the “event definition canvas”



Your final cohort will have n=280. Make sure you have the same results.

3. Review CLG User Guide Version 4.31 Manual



   a. Look through Table of Contents

   b. P. 17-25 Introduction and Core Concepts

   c. In the reading below notice the style of question and answer

   d. Pp. 25-167

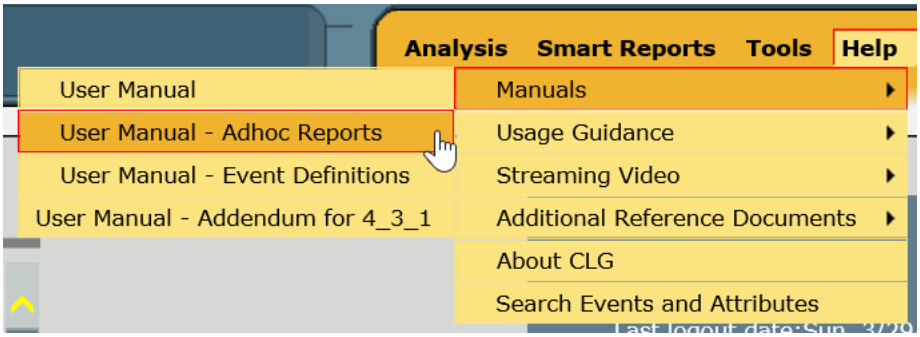
Additional Topics of Interest

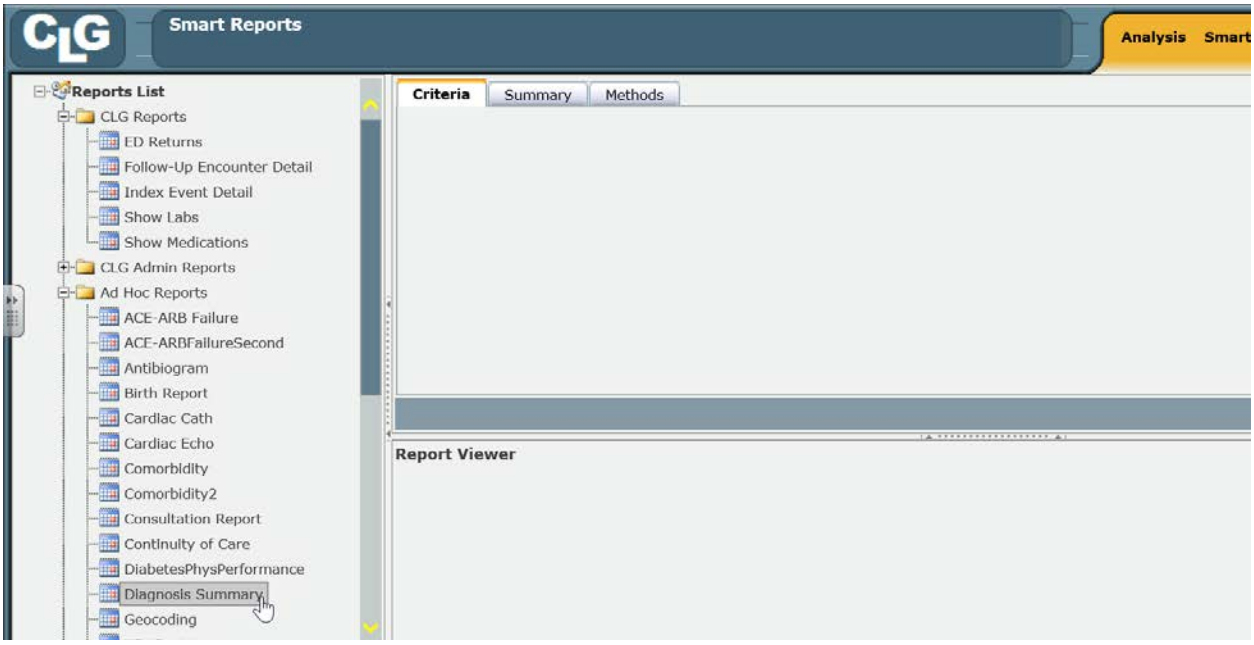
Find All the hospitalizations, ED visits, and Outpatient Visits in a temporal window post index

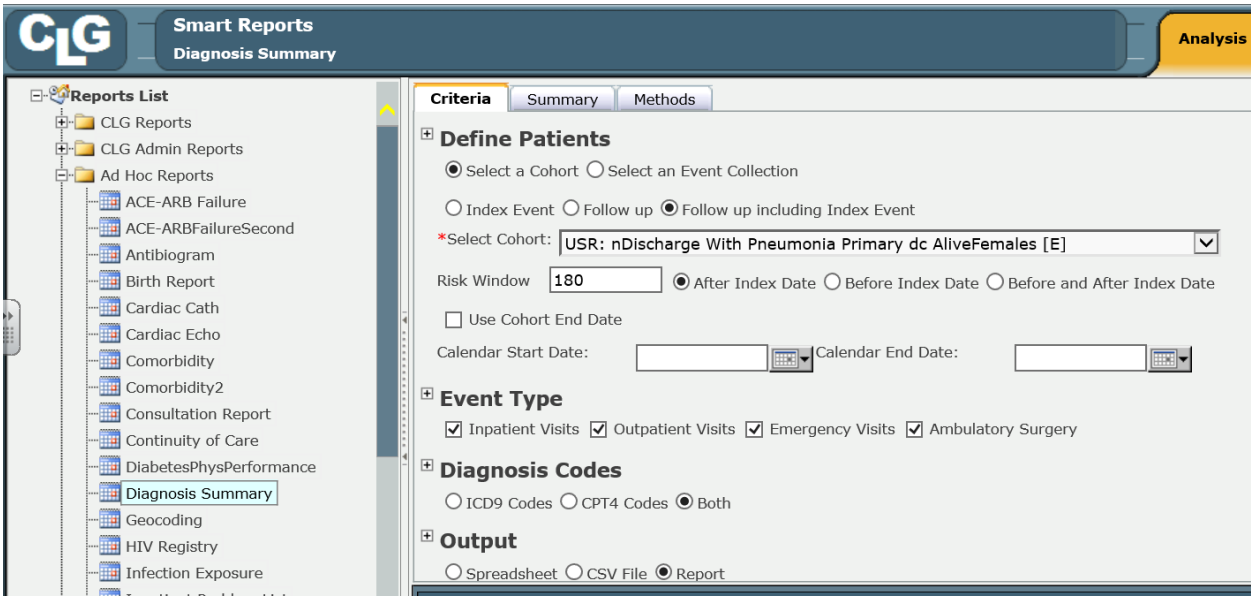
Tutorial 29:Find multiple diagnoses not just primary

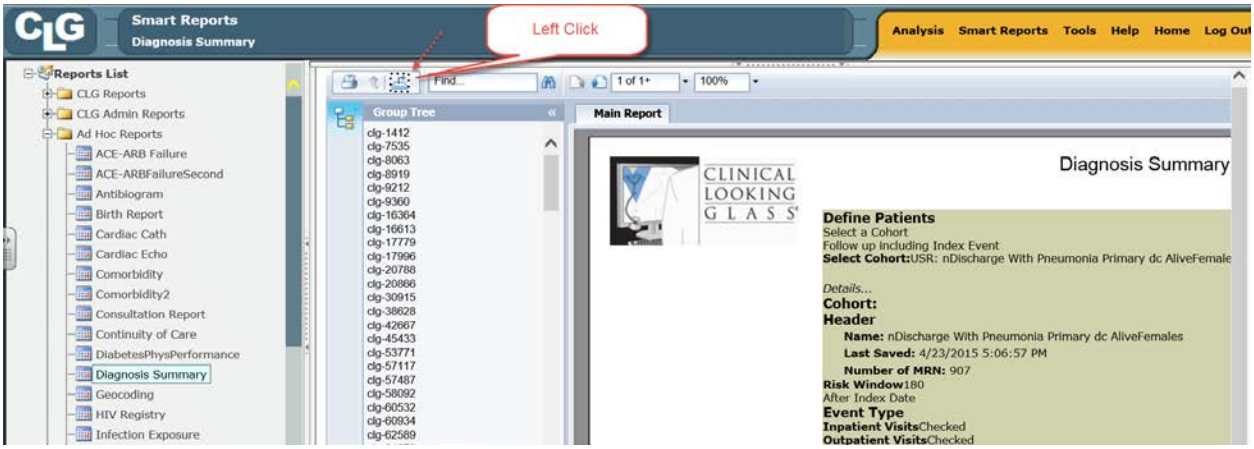
Use smart Report Diagnosis Summary:

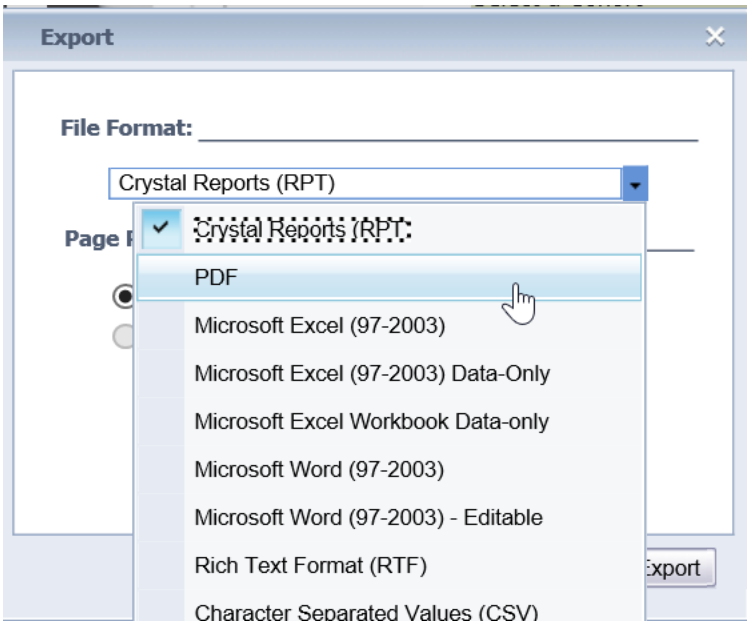
See video and manual:






Smart Reports
Diagnosis Summary
Analysis
Reports List
CLG Reports
CLG Admin Reports
Ad Hoc Reports
ACE-ARB Failure
ACE-ARBFailureSecond
Antibiogram
Birth Report
Cardiac Cath
Cardiac Echo
Comorbidity
Comorbidity2
Consultation Report
Continuity of Care
DiabetesPhysPerformance
Diagnosis Summary
Geocoding
HIV Registry
Infection Exposure
Criteria
Summary
Methods
Define Patients
Select a Cohort
Select an Event Collection
Index Event
Follow up
Follow up including Index Event
*Select Cohort:
USR: nDischarge With Pneumonia Primary dc AliveFemales [E]
Risk Window
180
After Index Date
Before Index Date
Before and After Index Date
Use Cohort End Date
Calendar Start Date:
Calendar End Date:
Event Type
Inpatient Visits
Outpatient Visits
Emergency Visits
Ambulatory Surgery
Diagnosis Codes
ICD9 Codes
CPT4 Codes
Both
Output
Spreadsheet
CSV File
Report


Smart Reports
Diagnosis Summary
Left Click
Analysis
Smart Reports
Tools
Help
Home
Log Out
Reports List
CLG Reports
CLG Admin Reports
Ad Hoc Reports
ACE-ARB Failure
ACE-ARBFailureSecond
Antibiogram
Birth Report
Cardiac Cath
Cardiac Echo
Comorbidity
Comorbidity2
Consultation Report
Continuity of Care
DiabetesPhysPerformance
Diagnosis Summary
Geocoding
HIV Registry
Infection Exposure
Find...
1 of 1+
100%
Group Tree
Main Report
Diagnosis Summary
CLINICAL LOOKING GLASS
Define Patients
Select a Cohort
Follow up including Index Event
Select Cohort:USR: nDischarge With Pneumonia Primary dc AliveFemale
Details...
Cohort:
Header
Name: nDischarge With Pneumonia Primary dc AliveFemales
Last Saved: 4/23/2015 5:06:57 PM
Number of MRN: 907
Risk Window180
After Index Date
Event Type
Inpatient VisitsChecked
Outpatient VisitsChecked


Export
File Format:
Crystal Reports (RPT)
Crystal Reports (RPT)
PDF
Microsoft Excel (97-2003)
Microsoft Excel (97-2003) Data-Only
Microsoft Excel Workbook Data-only
Microsoft Word (97-2003)
Microsoft Word (97-2003) - Editable
Rich Text Format (RTF)
Character Separated Values (CSV)

MRN: clg-1412

Sex: F **Age at Index Date: 57** **Index Date: Jan 11 2010 5:47PM** **PCP: Huang Md , Hui-li ,**

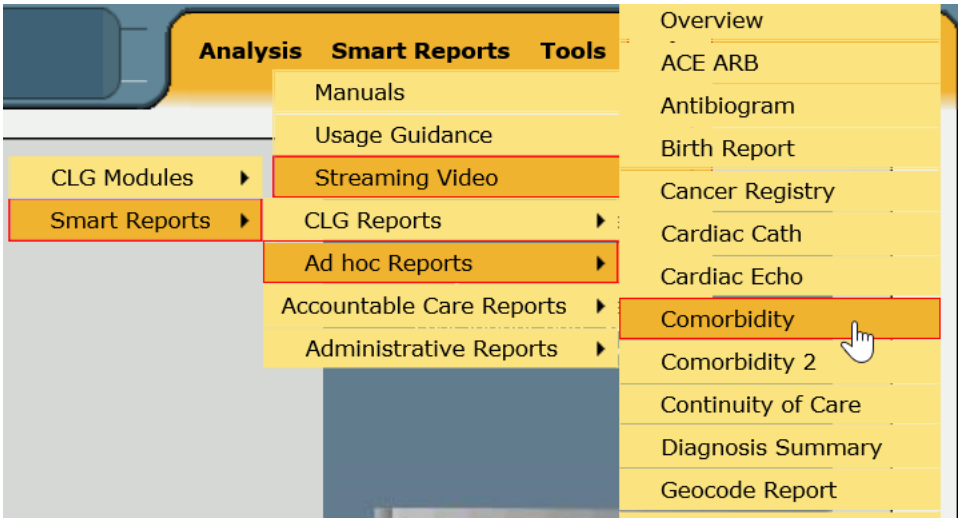
	Facility			Admit Date	Discharge Date	Disposition	Admit Source	Referral
Inpatient	MMC Moses Division			Jan 8 2010 2:28AM	Jan 11 2010 5:47PM	REGULAR (HOME - SELF CARE)	EMERGENCY ROOM VISITS	Not from a Nursing Home
		Admitting	486	PNEUMONIA, ORGANISM NOS				
	Present On Admission	Primary	486	PNEUMONIA, ORGANISM NOS				
	Present On Admission	Secondary	300.00	ANXIETY STATE NOS				
	Present On Admission	Secondary	493.92	ASTHMA, UNSPECIFIED, W/ACUTE EXACERBATION				
	Present On Admission	Secondary	584.9	Acute kidney failure NOS				
	Present On Admission	Secondary	285.9	ANEMIA NOS				
	Present On Admission	Secondary	272.4	HYPERLIPIDEMIA NEC/NOS				
	Present On Admission	Secondary	276.1	HYPOSMOLALITY				
	Present On Admission	Secondary	401.9	HYPERTENSION NOS				
Outpatient	HIP-GRAND CONCOURSE			Jan 13 2010 8:45AM		Visit MD: Huang Md , Hui-li ,		
		Primary	486	PNEUMONIA, ORGANISM NOS				
		Secondary	V15.82	HISTORY OF TOBACCO USE				
		Secondary	272.4	HYPERLIPIDEMIA NEC/NOS				
		Secondary	305.03	ALCOHOL ABUSE-IN REMISS				
		CPT4	99214	OFFICE OUTPATIENT VISIT 25 MINUTES				
Emergency	MMC Moses Division			Jan 14 2010 11:45PM	Jan 15 2010 4:13AM	Home / Street		Not from a Nursing Home
		Primary	564.00	UNSPECIFIED CONSTIPATION				
		Secondary	719.45	JOINT PAIN-PELVIS				
		CPT4	99282	EMERGENCY DEPARTMENT VISIT LOW/MODER SEVERITY				
Outpatient	MMC Moses Division			Feb 23 2010 12:00AM		Visit MD: Khader Md , Samer N,		
		Primary	079.4	HUMAN PAPILLOMA VIRUS				
		Primary	V76.2	SCREEN MAL NEOP-CERVIX				
Outpatient	HIP-GRAND CONCOURSE			Feb 23 2010 12:00AM		Visit MD: Long-sharps Md , Paige L,		
		Primary	079.4	HUMAN PAPILLOMA VIRUS				

Smart Report with Charlson

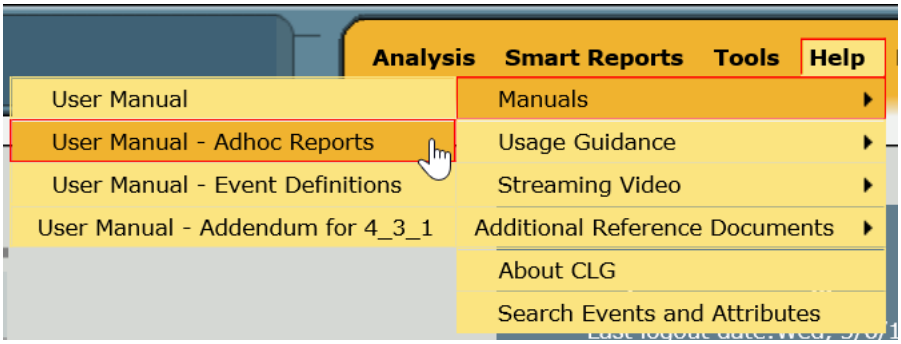
Tutorial 30: Charlson Comorbidity 2

The Charlson comorbidity report looks at a single hospitalization and produces from its administrative data (diagnoses) a Charlson comorbidity score (called “combined” which includes age) and prediction of 10 year mortality.

Video:



Read in User Manual Ad hoc Reports:

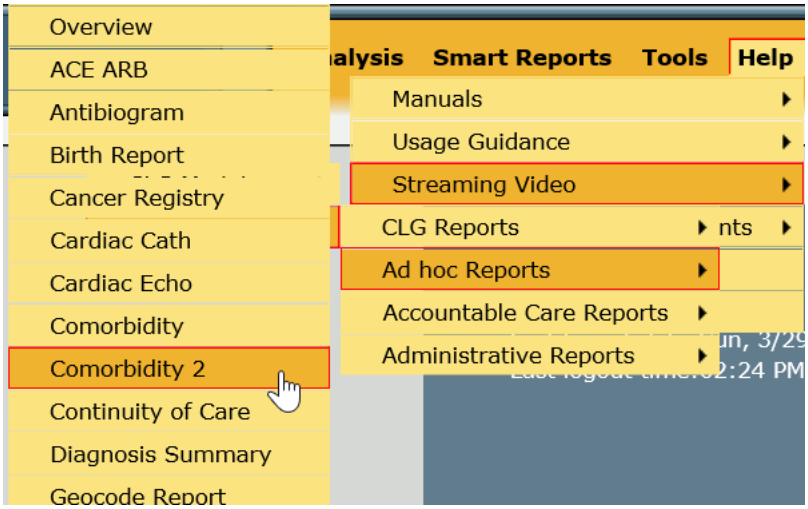


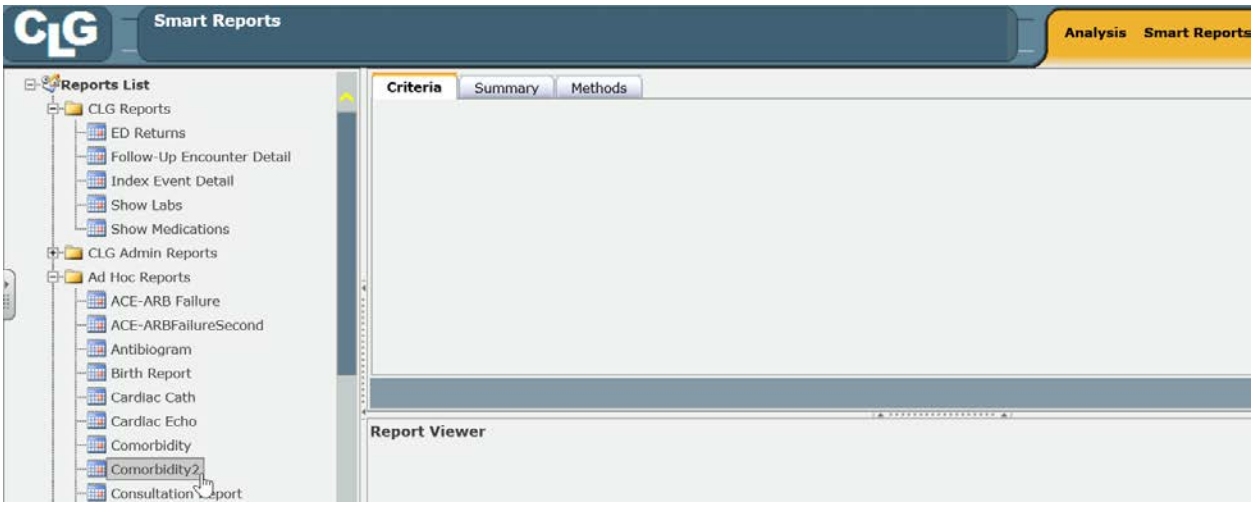
Chapter 11: Comorbidity “Sickliness Adjustment” Pp.123 -145

Comorbidity 2 (Charlson extension)

Adjust for Severity using administrative data collected over a prolonged time.

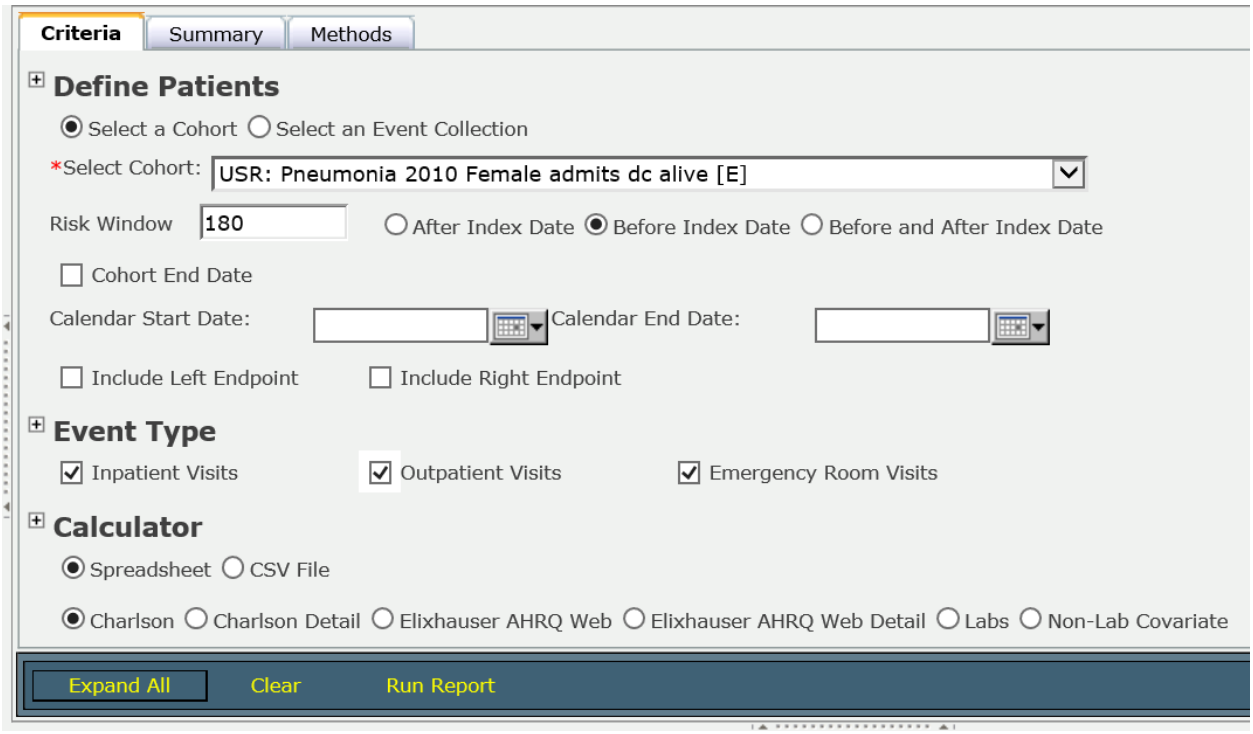
See video

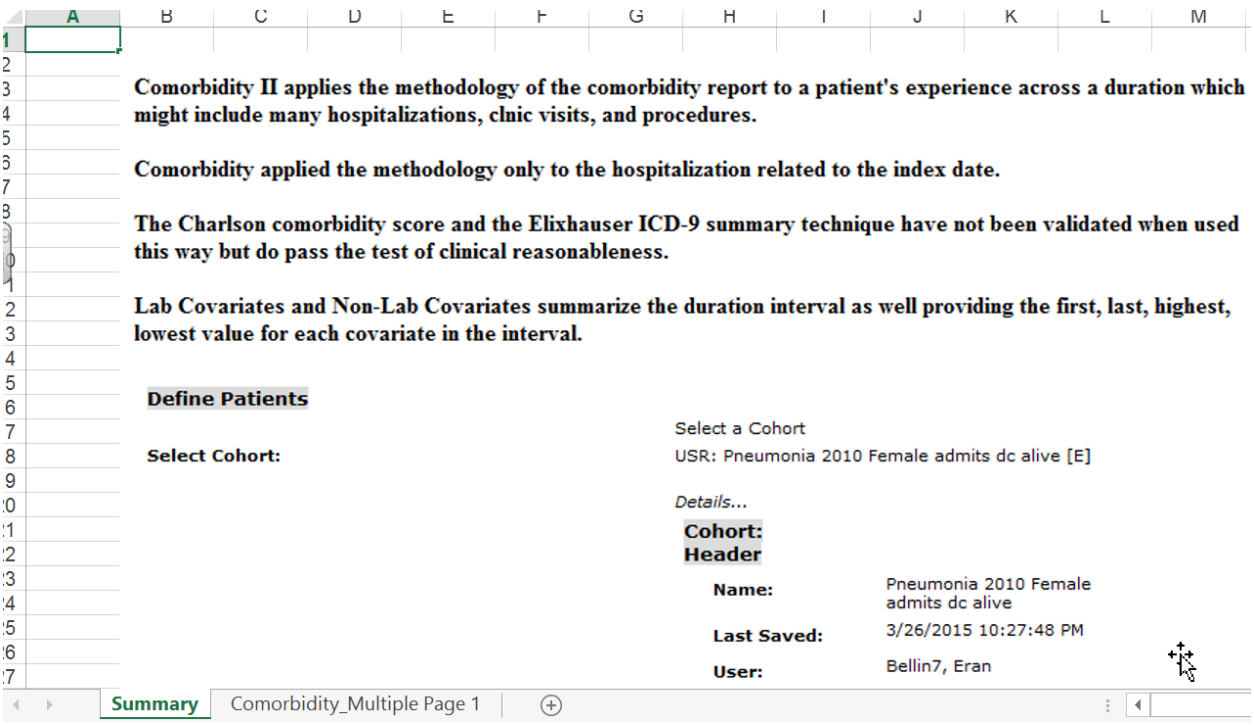




Create a Charlson Score looking back 180 days prior to the index.

Use the pneumonia cohort and go back 180 days to capture the preceding diagnoses from the index date going back. Use Hospital, ED, and outpatient visits as source of diagnoses.




Comorbidity II applies the methodology of the comorbidity report to a patient's experience across a duration which might include many hospitalizations, clnic visits, and procedures.
Comorbidity applied the methodology only to the hospitalization related to the index date.
The Charlson comorbidity score and the Elixhauser ICD-9 summary technique have not been validated when used this way but do pass the test of clinical reasonableness.
Lab Covariates and Non-Lab Covariates summarize the duration interval as well providing the first, last, highest, lowest value for each covariate in the interval.
Define Patients
Select Cohort:
Select a Cohort
USR: Pneumonia 2010 Female admits dc alive [E]
Details...
Cohort: Header
Name:
Pneumonia 2010 Female admits dc alive
Last Saved:
3/26/2015 10:27:48 PM
User:
Bellin7, Eran
Summary
Comorbidity_Multiple Page 1

and now look at spreadsheet:

X	Y	Z	AA	AB	AC	AD	AE
Moderate or Severe Liver Disease	Metastatic Solid Tumor	AIDS/HIV	Charlson Score	Age Related Risk	ICD9Count	Combined Score	Estimated % 10-yr survival
0	0	0	0	0	6	0	98.3
0	0	0	1	0	11	1	95.9
0	0	0	4	1	14	5	21.4
0	0	0	1	0	5	1	95.9
0	0	0	0	0	1	0	98.3
0	0	0	5	2	25	7	0
0	0	0	0	5	0	5	21.4
0	0	0	1	0	12	1	95.9

The relevant “Charlson Adjuster” is the Combined Score which takes age and diagnoses into consideration. You can use this score to compare two cohorts for comparability at baseline.

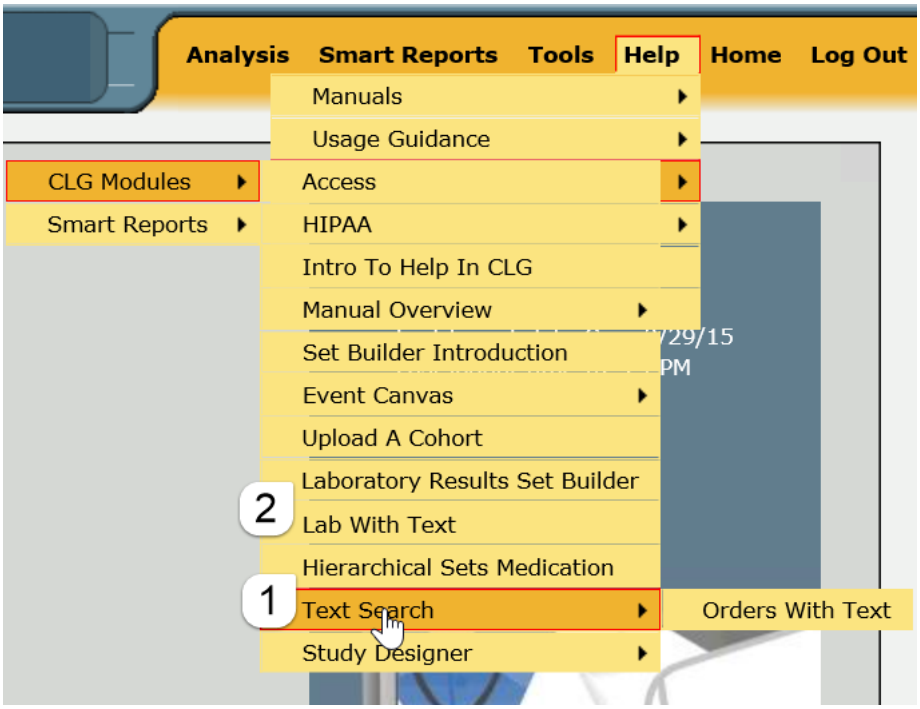
Text search

use video and reference manual:

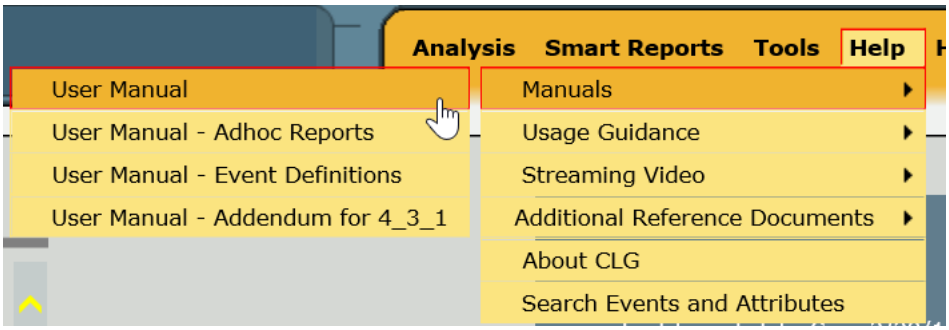
Tutorial 31: Text Search
https://www.youtube.com/watch?v=zUyTE7de81w

Must learn on own with video and with manual.

1- Orders with text
2- Lab with text



Manual:



Use CLG User Guide 4.3.1

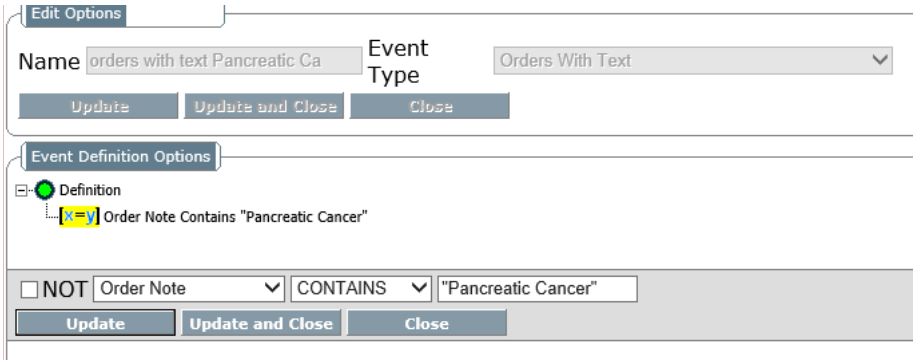
Text search include Chapter 11: Searching Text Based information p.317-368

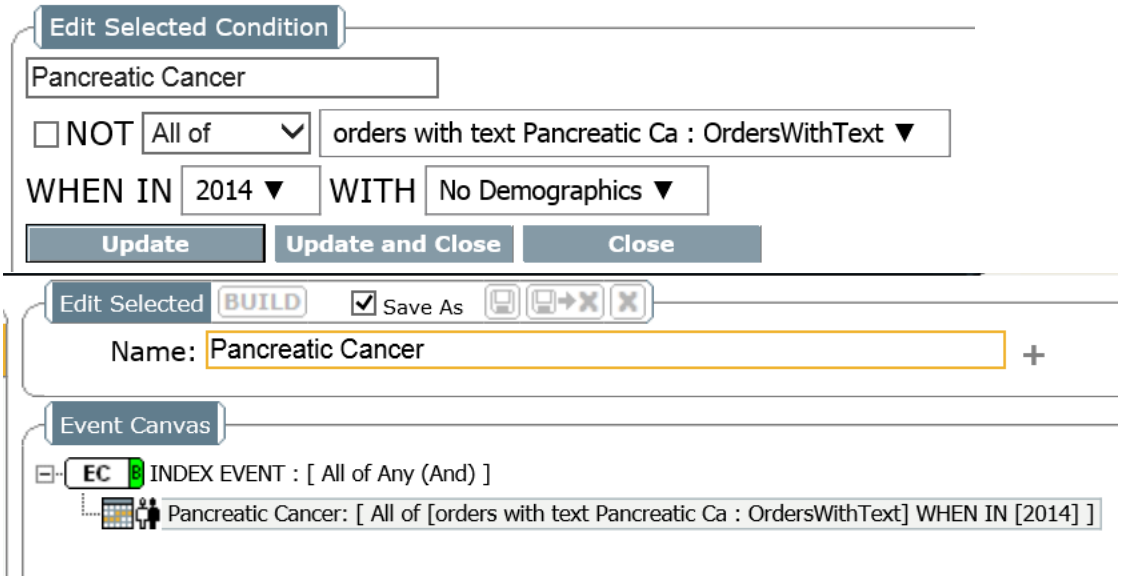
Look for the phrase “pancreatic cancer” in 2014. What are the “types” in orders with text that have “Pancreatic cancer” in them?

Steps:

Use

1. event collection approach;
2. event type = “orders with text” ; condition is
    a. order Note Contains “Pancreatic Cancer”

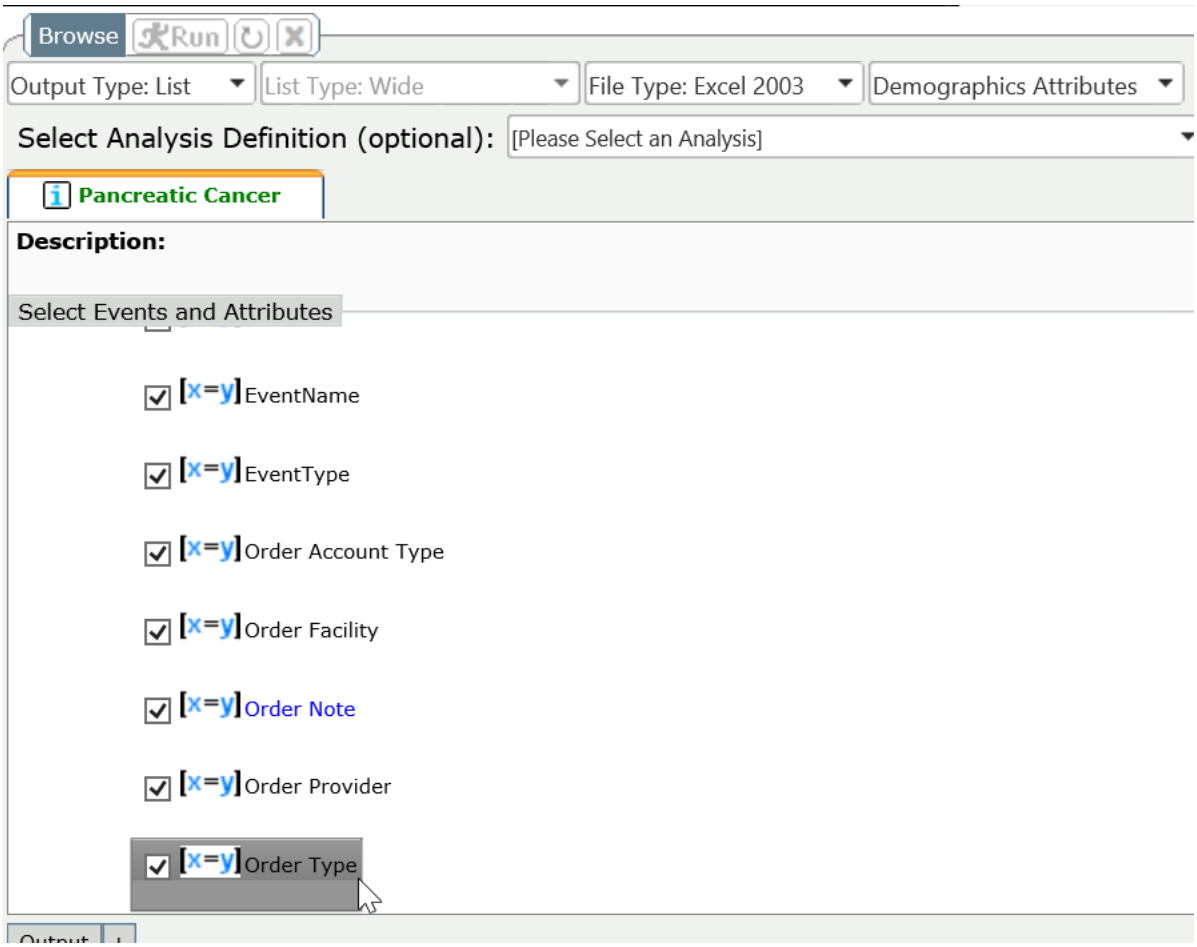




N= 4,513.

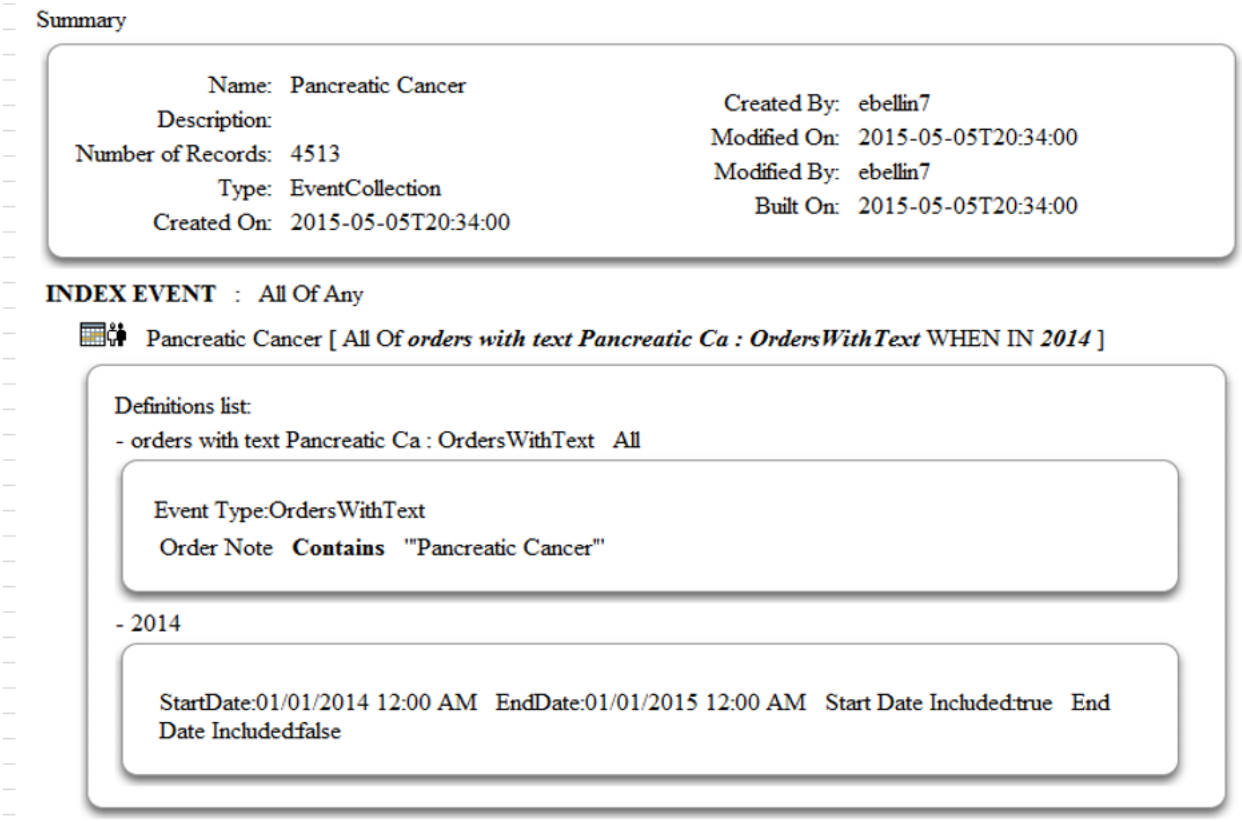
Please note, this function is very literal. If the text had “Pancreatic Ca” instead of “Pancreatic Cancer”, it would have been ignored.

Now browse the event collection and make sure to check off “Order Type”



Open up excel and insert Pivot table focused on Oder types.

I want to know what sort of texts at Montefiore had the word Pancreatic Cancer in it.


Summary
Name: Pancreatic Cancer
Description:
Number of Records: 4513
Type: EventCollection
Created On: 2015-05-05T20:34:00
Created By: ebellin7
Modified On: 2015-05-05T20:34:00
Modified By: ebellin7
Built On: 2015-05-05T20:34:00
INDEX EVENT : All Of Any
Pancreatic Cancer [All Of orders with text Pancreatic Ca : OrdersWithText WHEN IN 2014]
Definitions list:
- orders with text Pancreatic Ca : OrdersWithText All
Event Type:OrdersWithText
Order Note Contains '"Pancreatic Cancer"'
- 2014
StartDate:01/01/2014 12:00 AM EndDate:01/01/2015 12:00 AM Start Date Included:true End Date Included:false

There are about 96 different order types that have within them the full phrase “pancreatic cancer”. I sort ordered them and provide them as output:

Row Labels	Count of GROUP-1-INDEX-Pancreatic Cancer-1Order Type
Attending Progress Note	641
Discharge Summary	244
Intern Progress Note	216
Attending Admit H&P	186
Longitudinal Patient History	139
Intern Admit H&P	116
Phys Asst Admit H&P	115
CT ABDOMEN & PELVIS W/CONTRAST	115
Resident Admit H&P	97
CT THORAX WITH CONTRAST	58
Phys Asst Progress Note	47
Brief Note	46
Resident Progress Note	19
CT Thorax Abdomen & Pelvis with contrast	18
Chest XR-PA/Lat	17
GYN Ultrasound	17
Attending Pre-Op Evaluation	16
Surg Path Case	14
MRI ABD W/O CONT. FOLBY CONTR & FURTH	13
MRCP Abdomen w&w/o contrast	12
CT ABDOMEN & PELVIS W/O CONTRAST	11
CHEST PORTABLE	10
CT THORAX WITHOUT CONTRAST	10
PET/CT SCAN - BASE SKULL TO MID THIGH MM	9

Count of Order types with the phrase Pancreatic Cancer in them.

The spreadsheet has a column with the full text.

Event Search:

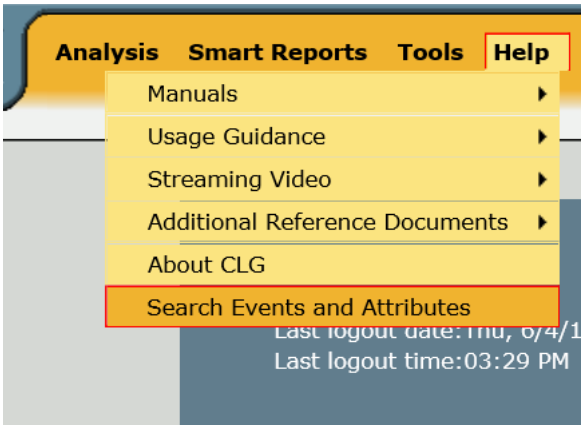
Which event do I want to use to answer my clinical question?

Tutorial 31: Event Search: Which event do I want to use to answer my clinical question?
https://www.youtube.com/watch?v=msTS6YPEVrI

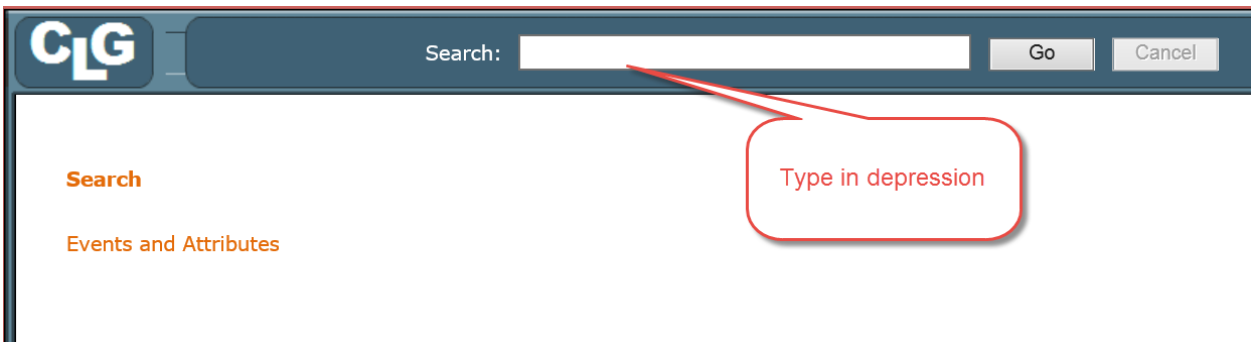
Use event manual to find

1. blood pressure. Systolic, diastolic.
2. Peak flow
3. Bmi
4. Depression

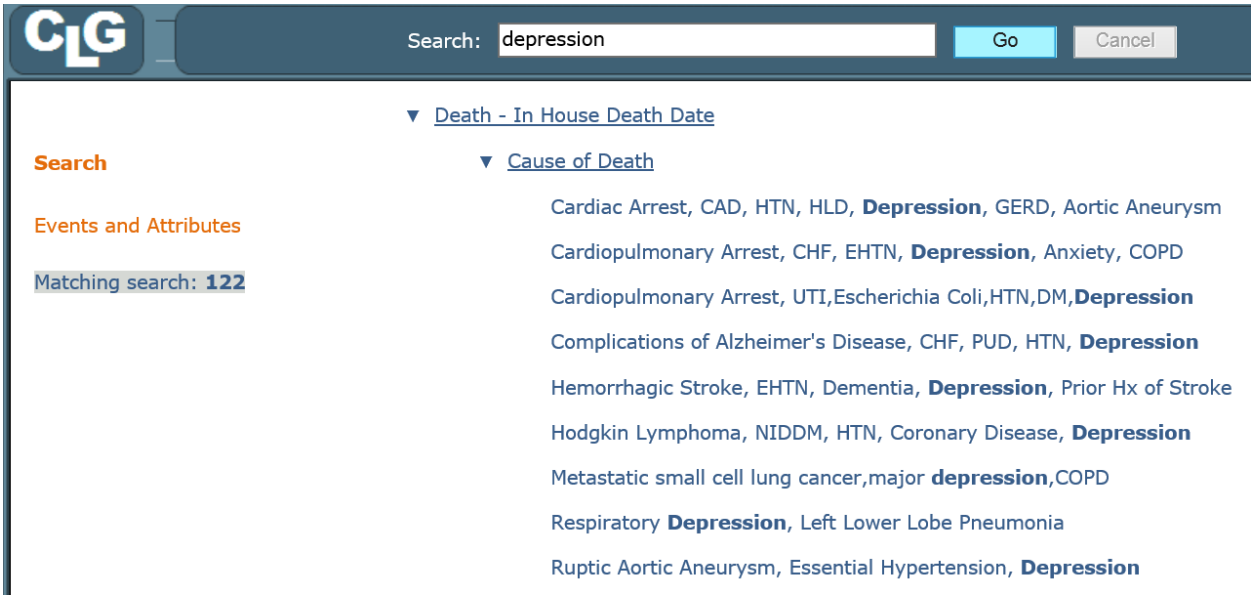
Or Use Search Events and Attributes:



Search Events and Attributes

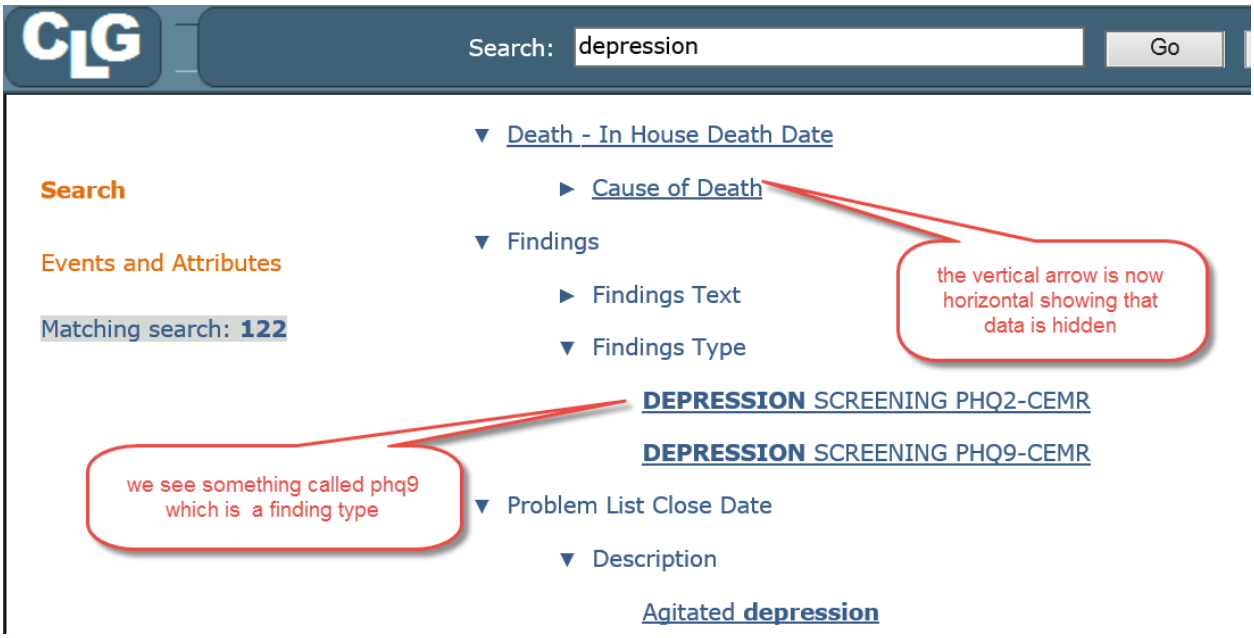


Now left click on Go


Search: depression
Go
Cancel
Search
Events and Attributes
Matching search: 122
▼ Death - In House Death Date
▼ Cause of Death
Cardiac Arrest, CAD, HTN, HLD, Depression, GERD, Aortic Aneurysm
Cardiopulmonary Arrest, CHF, EHTN, Depression, Anxiety, COPD
Cardiopulmonary Arrest, UTI,Escherichia Coli,HTN,DM,Depression
Complications of Alzheimer's Disease, CHF, PUD, HTN, Depression
Hemorrhagic Stroke, EHTN, Dementia, Depression, Prior Hx of Stroke
Hodgkin Lymphoma, NIDDM, HTN, Coronary Disease, Depression
Metastatic small cell lung cancer,major depression,COPD
Respiratory Depression, Left Lower Lobe Pneumonia
Ruptic Aortic Aneurysm, Essential Hypertension, Depression

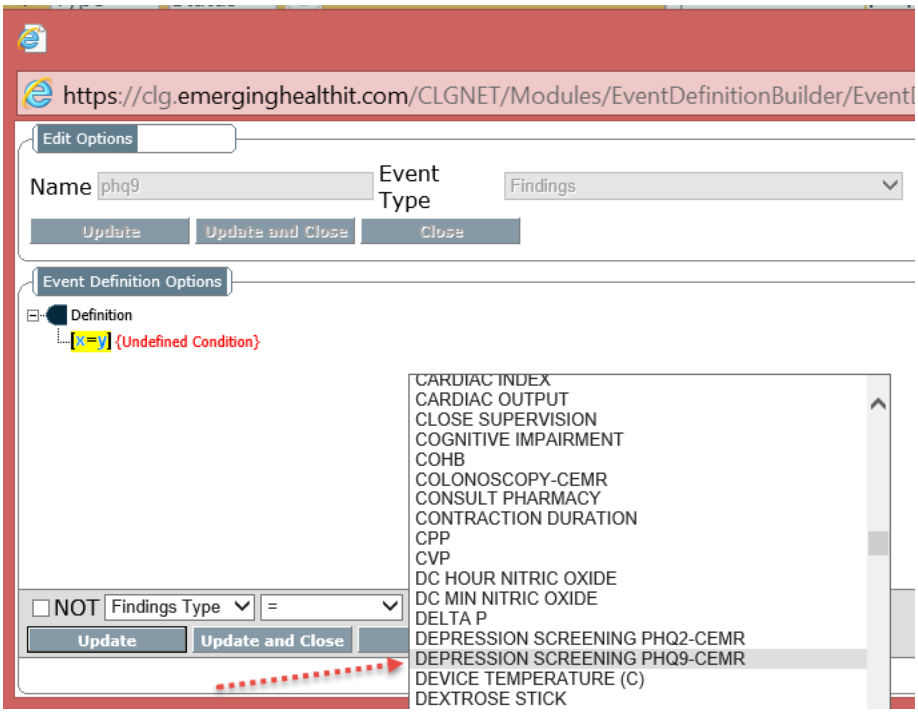
Notice how anything with depression in it, the values in a categoric field, the values in a finding type, the title of an event will be returned to you.

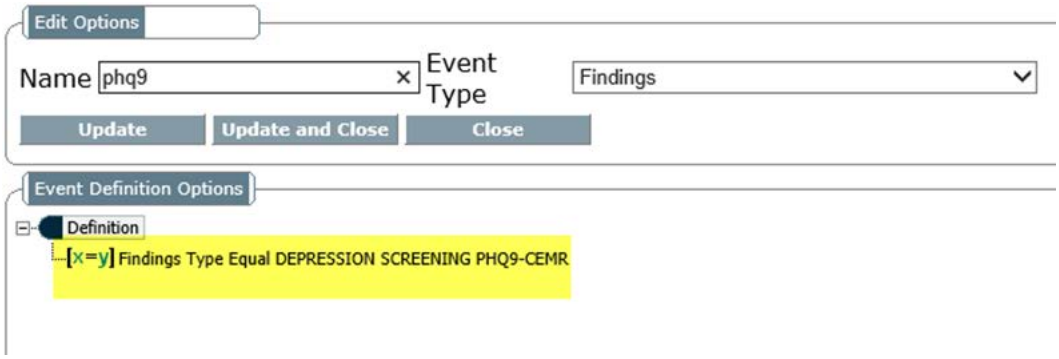
Left click on downward arrows to minimize those results you do not want to see.

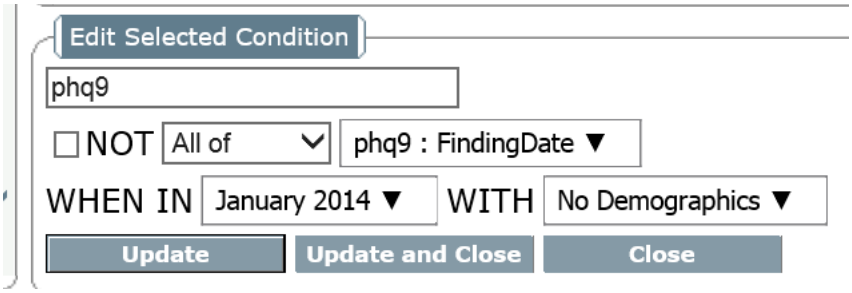


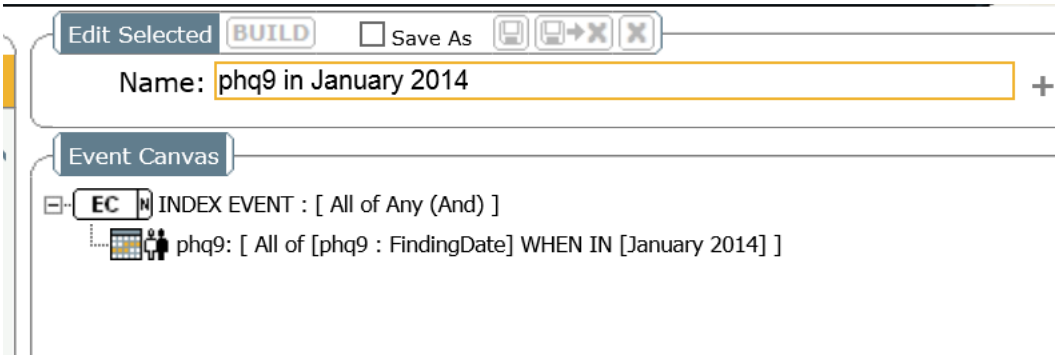
Notice in the program in the drop down for event type something called: PHq9-score cemr

You got a hint that such a thing existed from the search function.




Edit Options
Name phq9
Event Type
Findings
Update
Update and Close
Close
Event Definition Options
Definition
[x=y] Findings Type Equal DEPRESSION SCREENING PHQ9-CEMR

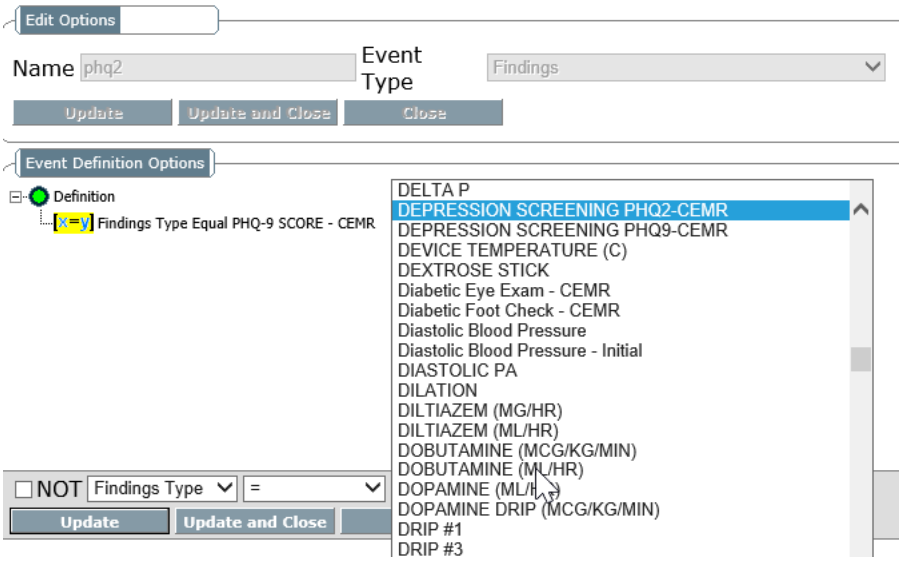

Edit Selected Condition
phq9
NOT
All of
phq9 : FindingDate ▼
WHEN IN
January 2014 ▼
WITH
No Demographics ▼
Update
Update and Close
Close

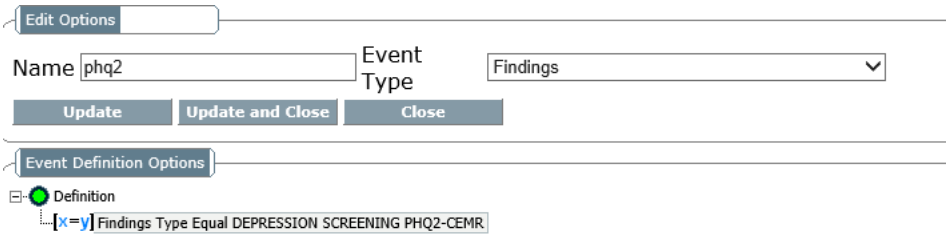

Edit Selected
BUILD
Save As
Name: phq9 in January 2014
Event Canvas
EC
INDEX EVENT : [All of Any (And)]
phq9: [All of [phq9 : FindingDate] WHEN IN [January 2014]]

N= 695

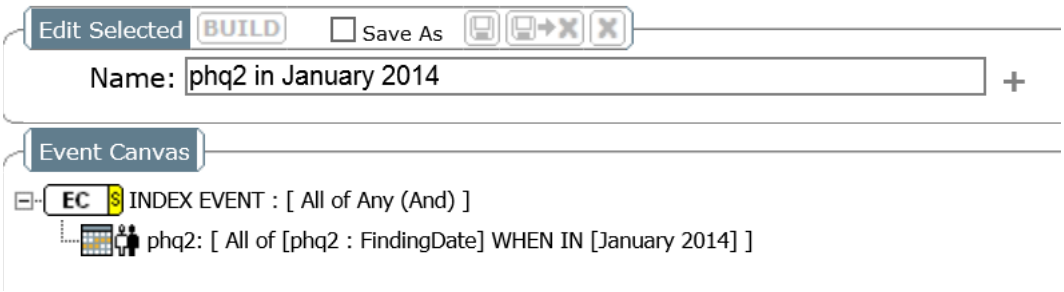
695 measures of depression in the month of January 2014 using the phq9

Now consider how many episodes of screening phq2 in the same time period





With a final result on the event canvas of:


Edit Selected
BUILD
Save As
Name: phq2 in January 2014
Event Canvas
EC
INDEX EVENT : [All of Any (And)]
phq2: [All of [phq2 : FindingDate] WHEN IN [January 2014]]

N=17,532. So there were 17,352 times that a screening phq2 was used in the month of January.

Notice how idiosyncratic phq2 and phq9 is. Notice how differently they are named in the system. One begins “phq-9….” and the other begins as “Depression Screening PHQ2”.

Exercise:

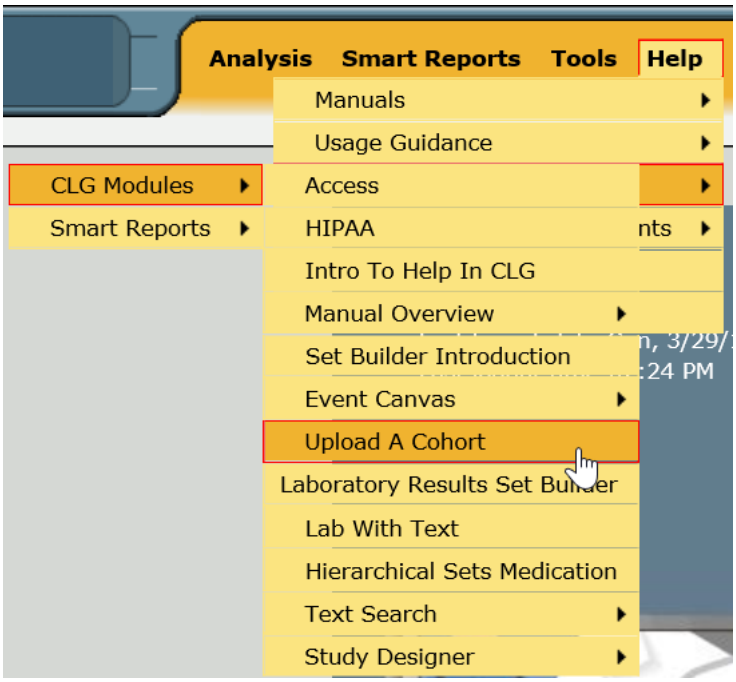
1. Look for Apache Scores. Where will you find them?
2. Look for blood pressure.

Upload cohort

Tutorial 33: Upload Cohort
https://www.youtube.com/watch?v=ubnZoAgx6A8

When you have a list of medical record numbers and index dates and want to enroll this list as a cohort or event collection in CLG, you will use this feature.

See video:



List Method – When you want to Create an Indicator variable 0/1

Using an Analysis Definition to Create an Indicator variable

Tutorial 34: List Method - How to create an indicator variable for continuous or categoric Variables
https://www.youtube.com/watch?v=i3hEdgb05ag

Background: Sometimes when you have a cohort of patients you want to build a spreadsheet with an indicator variable yes = 1 and no=0. For example: Did the patient have in the year prior to the admission a Hemoglobin A1c greater than or equal to 6.5. Or, was the patient admitted from a nursing home (yes, No).

The cohort was built and now you want to know whether these questions are true or not. The list method provides a good way to solve this problem.

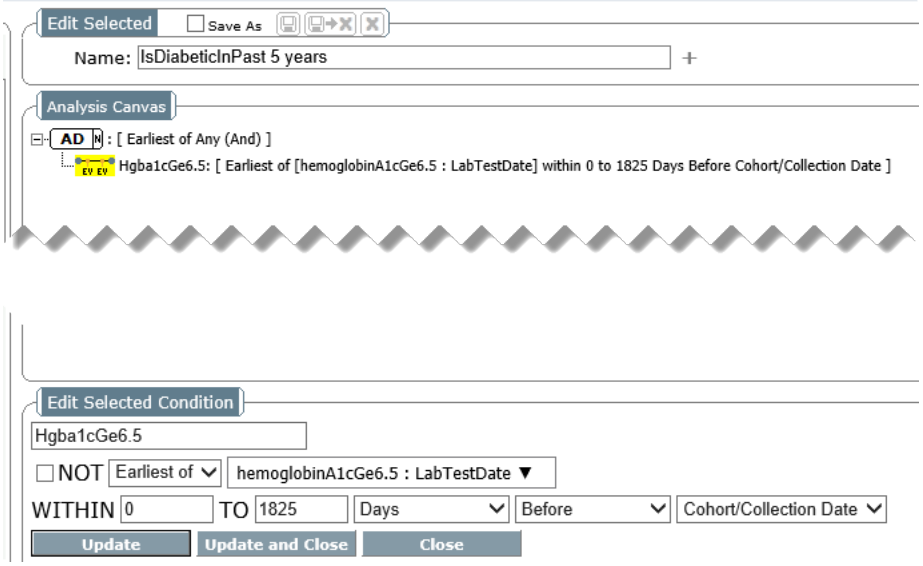
Let's create a new study with the two cohorts of pneumonia patients from 2010 discharged alive from the hospital based upon an inpatient admission event. One cohort was male and one was female.

You built this before so this should be easy.

Name the study "Pneumonia detail"

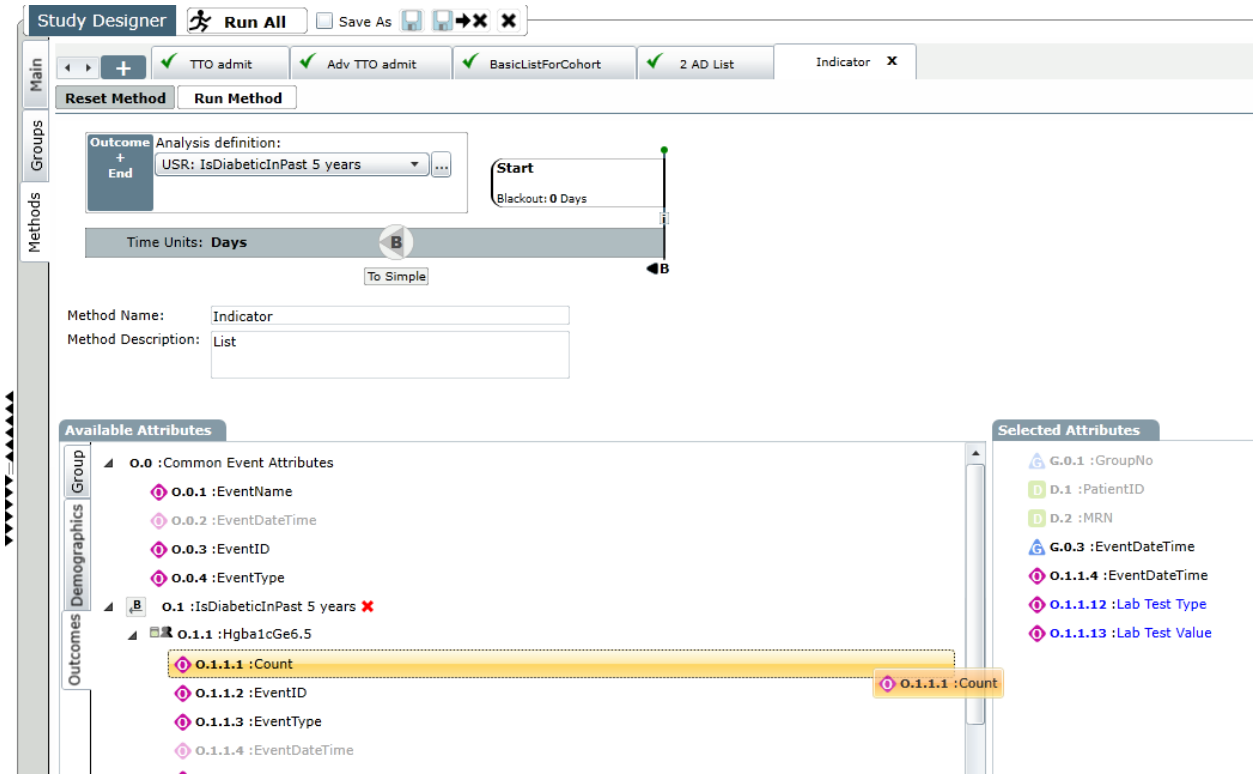
1. Let's build a list method called "IsDiabeticInPast5Years.
2. Goto advanced Method
3. Build an indicator variable for HemoglobinA1c greater than or equal to 6.5 in the preceding five years. You only care about the existence yes/no and really do not care which one so you can chose "Earliest".
4. Eliminate in the list populator attributes selected all the attributes selected. This is just for ease of seeing the results.

5. Click on three dotted button to open an Analysis Definition builder canvas

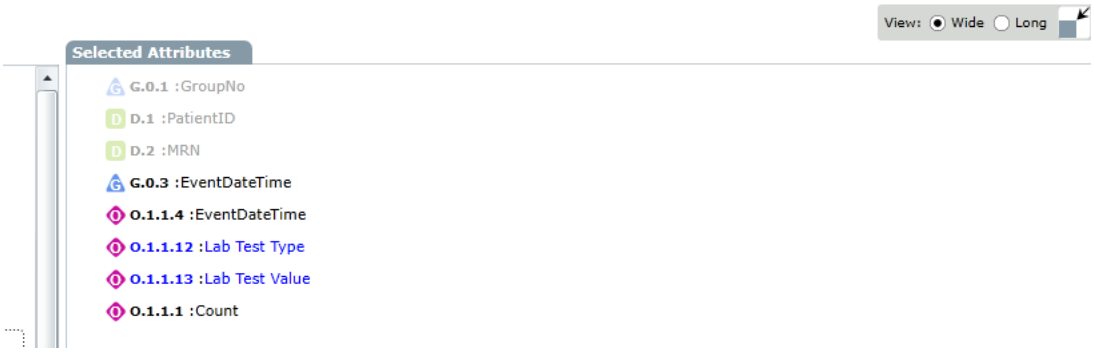


Using this AD will find the earliest value, but more importantly the **count** variable (to be shown in the list populator) when applied to an AD with a singularity (Earliest or Latest) will produce a zero when no record was found and a one when at least one value was found in the column for the count variable in the list method spreadsheet.

The image below shows us invoking the AD called “IsDiabeticInPast5Years” and then dragging the count variable in the list populator from *available attributes* to *selected attributes.*



Resulting in Selected Attributes that look like this:



Run the study.
Exporting the resulting spreadsheet shows a count field with the required 0/1

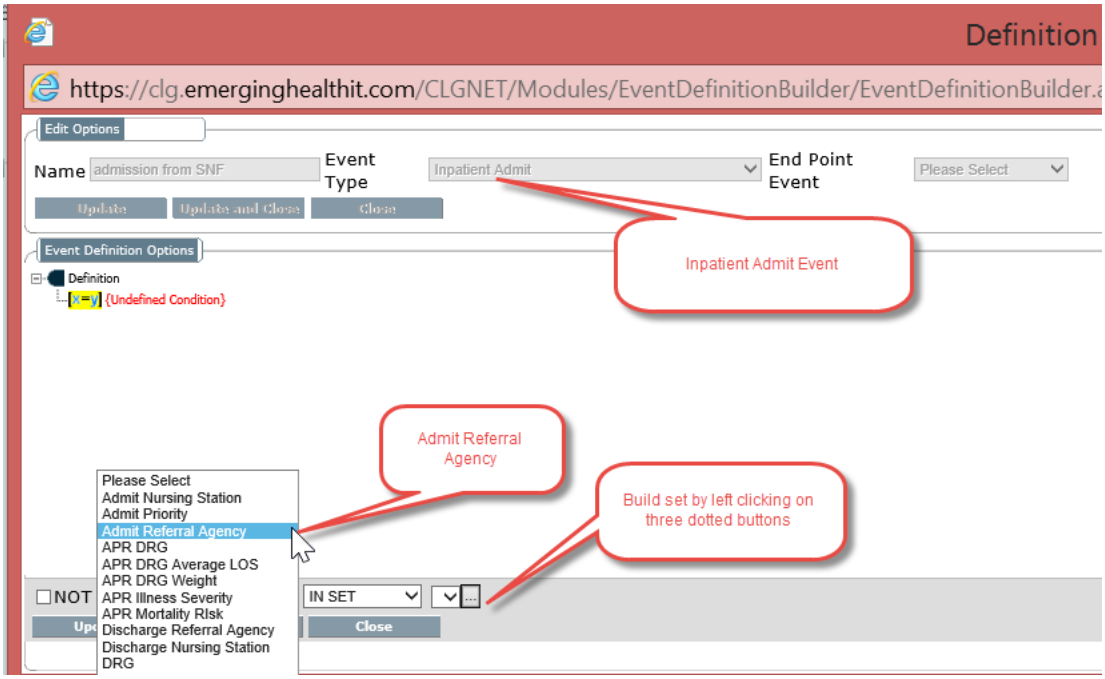
IsDiabeticInPast 5 years-Hgba1cGe6.5-Analysis Instance Count
0
0
0
1
0
0
1
0
1
0
0
0
1
0
0
1

I have therefore demonstrated how to use a numeric based AD to generate a 0/1 dummy.

Indicator Variable for a Categoric Variable Value set

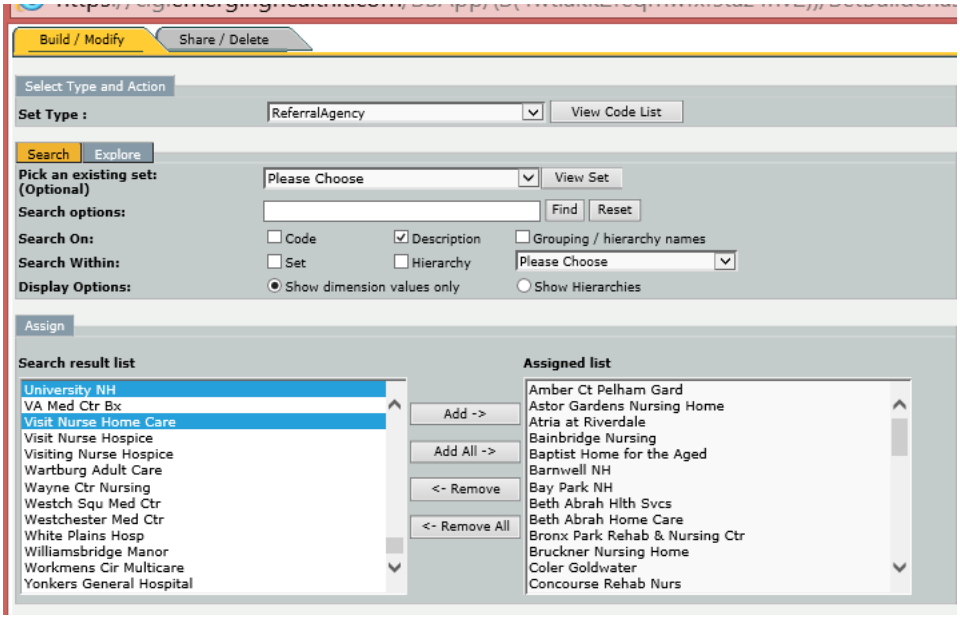
We also want an indicator variable for the categoric variable SNF (Skilled Nursing Facility). We want to know if the patient was admitted from a nursing facility.

For this AD, we build the *latest* admission event within 0 to 10 days *before* the cohort's admission. This tricks CLG to be looking at the very admission that is the cohort member's admission. The nearest admission is the admission at zero days away from the index admission so we are functionally looking at whether the index admission came from a nursing home.



Click on the three dotted button.

Clinical Looking Glass will open a window to build a set for the Admission Referral Agency.



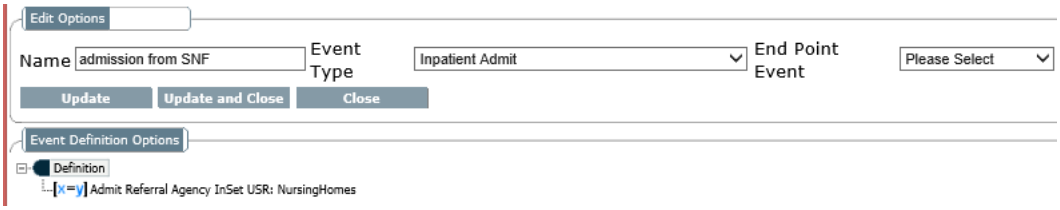
Skilled Nursing Facilities

Bainbridge Nursing & Rehab Center
Bay Park Center for Nursing & Rehab
Beth Abraham Health Services- PARTNER 5
Bronx Center for Rehab & Healthcare
Bronx Lebanon Special Care Center
Bronx Park Rehab & Nursing Center
Casa Promesa
Concourse Rehab & Nursing Center
Daughters of Jacob Nursing Home
East Haven Nursing & Rehab Center
Eastchester Rehab & Health Care Center
Fieldston Lodge Care Center
Gold Crest Care Center
Grand Manor Nursing & Rehab Center
Hebrew Home at Riverdale- Partner 5
Highbridge Woodycrest Center
Hudson Pointe at Riverdale Center for Nursing & Rehab
Jewish Home Lifecare- Partner 5
Kings Harbor Multicare Center- PARTNER 5
Kingsbridge Heights Rehab & Care Center
Laconia Nursing Home
Manhattanville Rehab & Health Care Center
Methodist Home for Nursing & Rehab

Morningside House
Morris Park Nursing Home
Mosholu Parkway Nursing & Rehab Center
Park Gardens Rehab & Nursing Center
Pelham Parkway Nursing Care & Rehab Facility
Providence Rest Nursing Home
Rebekah Rehab & Extended Care Center
Regeis Care Center
Riverdale Nursing Home
Schervier Nursing Care Center- PARTNER 5
Split Rock Rehab & Health Care Center
St. Barnabas Rehab & Continuing Care Center
St. Patrick's Home for the Aged & Infirm
St. Vincent de Paul Rehab & Nursing Center
Terrace Healthcare Center
Throgs Neck Extended Care
University Nursing Home
Wayne Center for Nursing & Rehab
Williamsbridge Manor Nursing Home
Workmen's Circle MultiCare Center

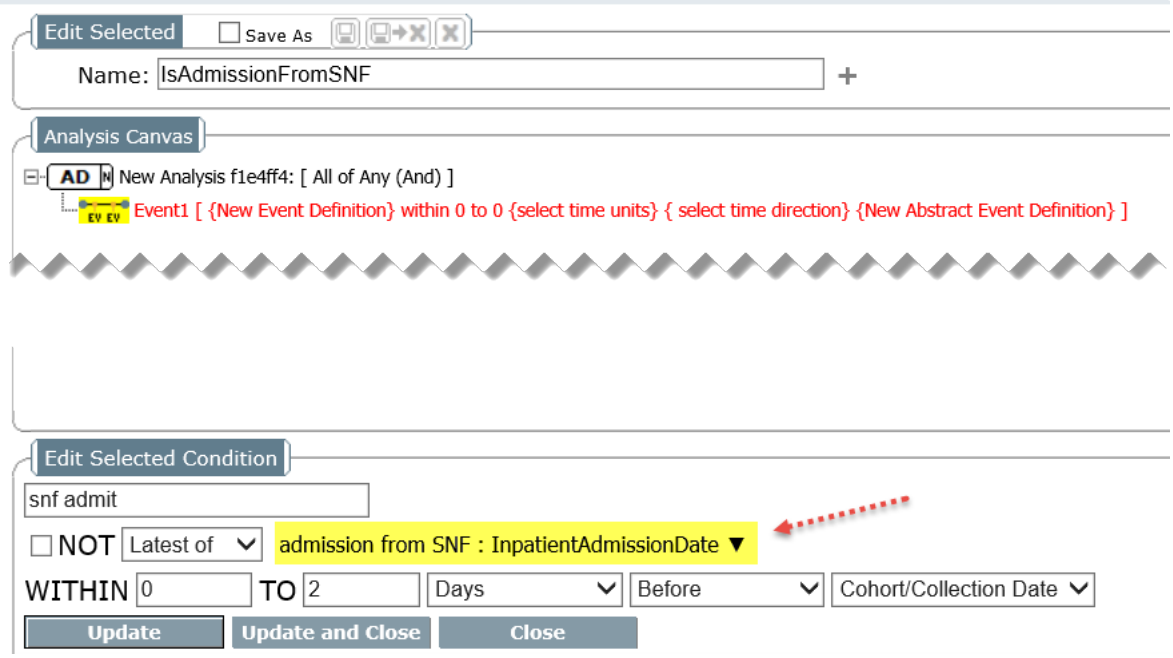
Build the set and then save.
Now Update and save.

We have an admission event with a referral agency equal to a set of nursing homes.



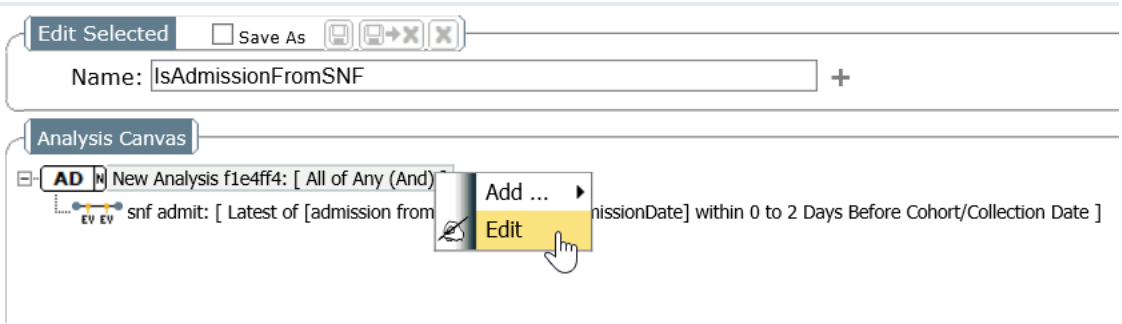
Update and Close.

You have now populated the event in the gui for the analysis canvas.


Edit Selected
Save As
Name: IsAdmissionFromSNF
Analysis Canvas
AD N New Analysis f1e4ff4: [All of Any (And)]
Event1 [{New Event Definition} within 0 to 0 {select time units} { select time direction} {New Abstract Event Definition}]
Edit Selected Condition
snf admit
NOT Latest of
admission from SNF : InpatientAdmissionDate
WITHIN 0 TO 2 Days Before Cohort/Collection Date
Update
Update and Close
Close

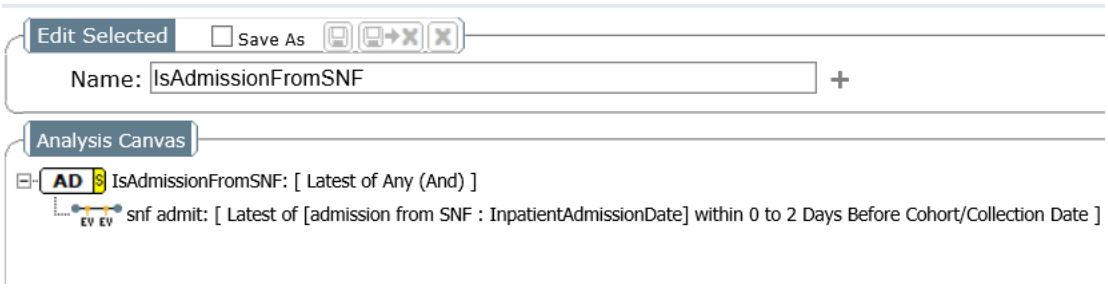
Now Update and close

Edit the Index Event line of the analysis canvas Analysis Definition (AD):

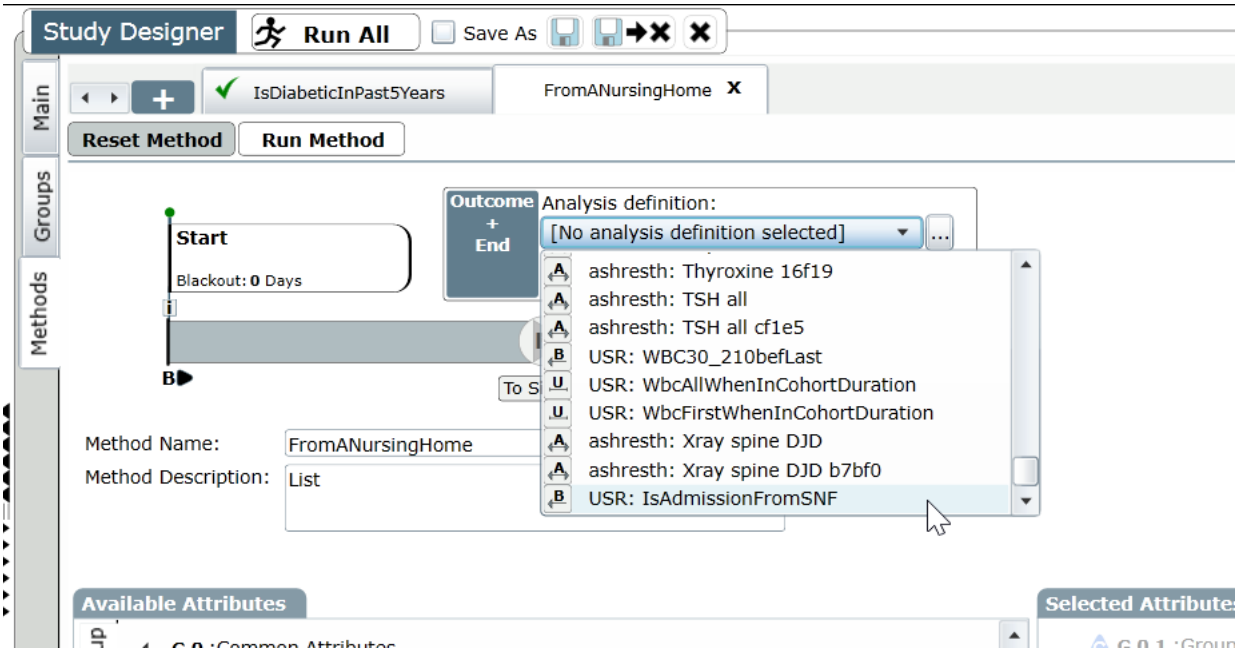

Edit Selected
Save As
Name: IsAdmissionFromSNF
Analysis Canvas
AD N New Analysis f1e4ff4: [All of Any (And)
snf admit: [Latest of [admission from
Add ...
Edit
issionDate] within 0 to 2 Days Before Cohort/Collection Date]

Change Latest so you have a singularity 0/1 no /yes.

Update and close:

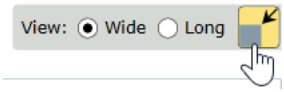

Edit Selected
Save As
Name: IsAdmissionFromSNF
Analysis Canvas
AD
IsAdmissionFromSNF: [Latest of Any (And)]
snf admit: [Latest of [admission from SNF : InpatientAdmissionDate] within 0 to 2 Days Before Cohort/Collection Date]

Now save. You have created your indicator analysis Definition that can be used exactly as the previous indicator was used.

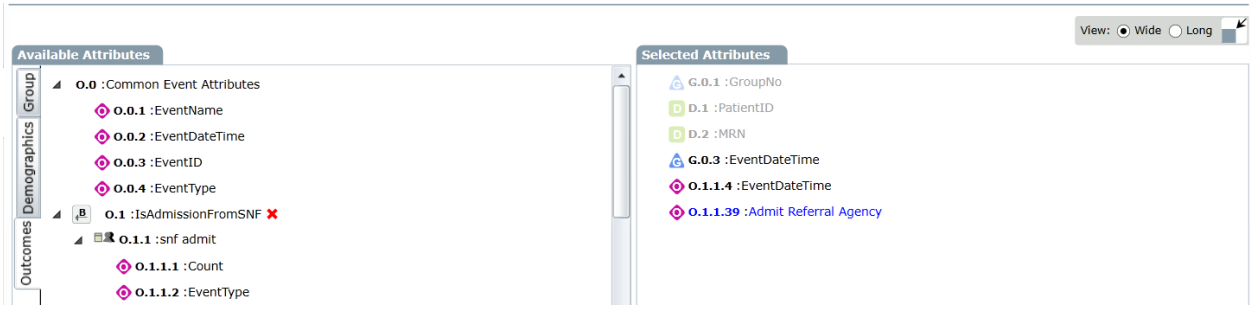


Choose the AD in the Advanced Method: IsAdmissionfromSNF

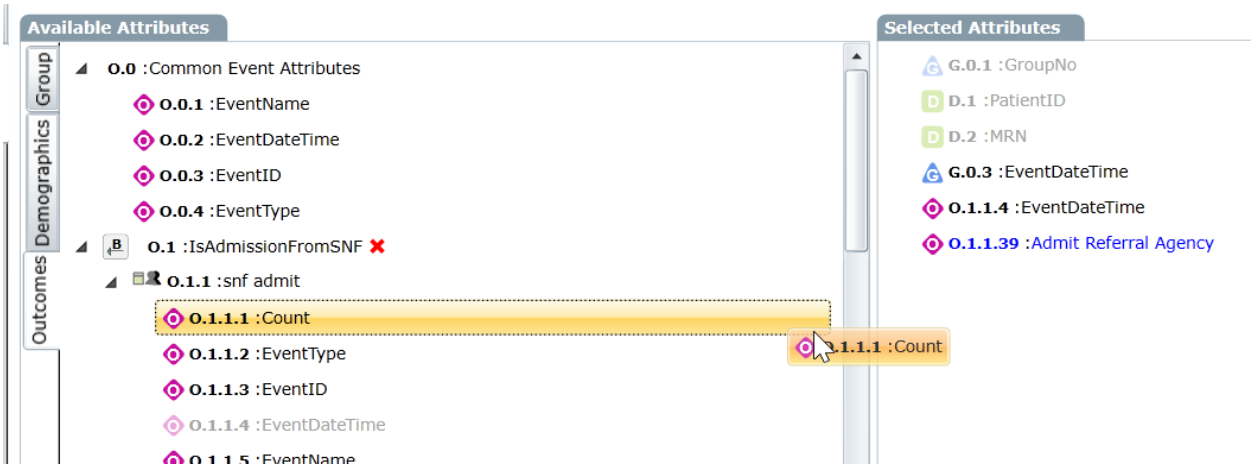
Maximize the image of the list populator by left clicking:



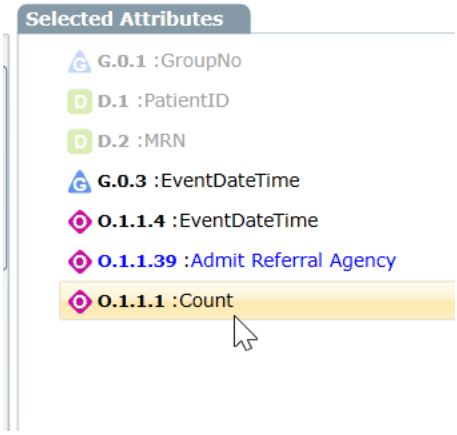
Resulting in:



Now drag count over to the selected attributes.



Resulting in:



Now run the method and note the resulting spreadsheet:

IsAdmissionFromSNF-snf admit-Analysis Instance Count
1
0
0
1
0
1
0
1
0
0
0
1
0
0
0
0

You also have access to the actual SNF names in another field.

Outcome(qual)IsAdmissionFromSNF-snf admit-1Admit Referral Agency
Other Nursing Home
Morningside House
Other Nursing Home
Kings Hrbr MultiCare
Morningside House

Tutorial 35: Counting Previous Hospitalizations in Wide List View

How to turn a multiplicity into a singularity using only the count attribute and no other fields from an Analysis Definition using All.

https://www.youtube.com/watch?v=EoM7XXaeWBY&list=PLf7raPnmlLOeAWU2cNf2jIMDRqQuUTCum&index=32

In a previous tutorial I pointed out that whenever you use in list method All, you must choose the "long view" to review the results in a spreadsheet. There is one exception. If you restrict yourself to using only the count variable from the Analysis Definition AD with All, the count is functionally a singularity and can be used in the wide view.

Warning!!! You must be extremely careful. You must eliminate from the selected "AD with all" any variable other than count. If for example, you choose, or retain, event date time, then every instance of the event will generate another column with the event's date. Remember if one person has 100 dates, everyone in the spreadsheet will have 100 columns for date.

The use of AD "with all" as a singularity is useful when it is the count that you actually care about.

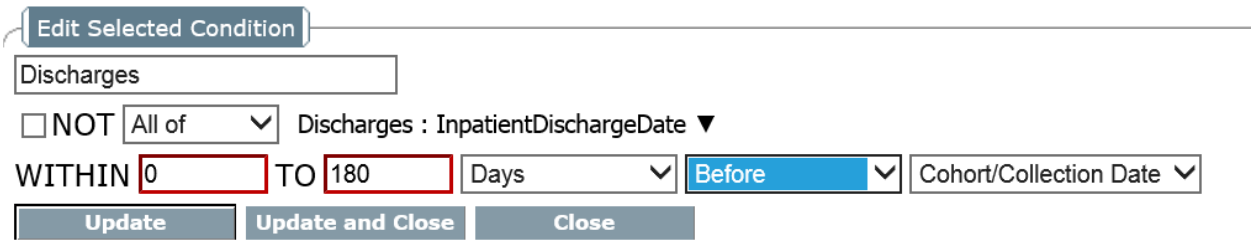
For example if you are looking at the pneumonia patients and you want to know how many previous hospital discharges were experience by the patients in the preceding 180 days. What you are looking for is just the count and the wide view is perfectly appropriate if you make sure only to allow the "count" to be brought into the selected attributes.

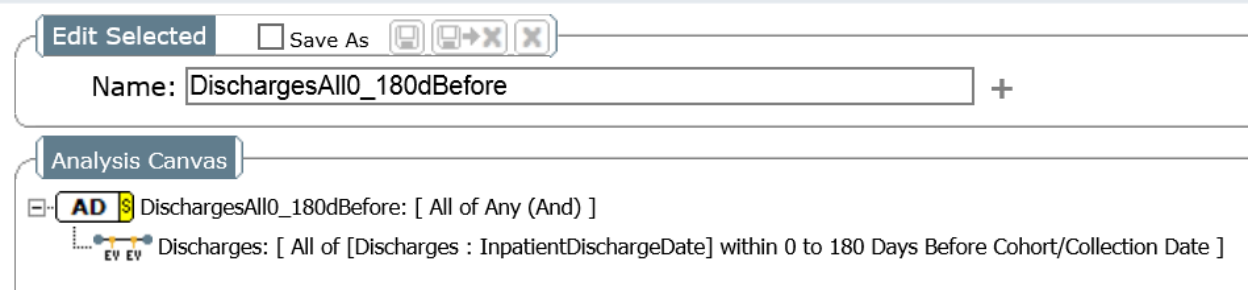
The same is true of number of ED visits without a disposition = admission in the past 180 days.

Details follow:

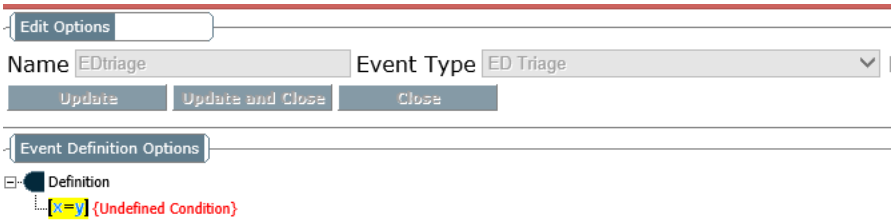
First select the two groups of admissions with pneumonia and create two AD's one for the preceding discharges and one for the preceding Emergency Department without admission visits.

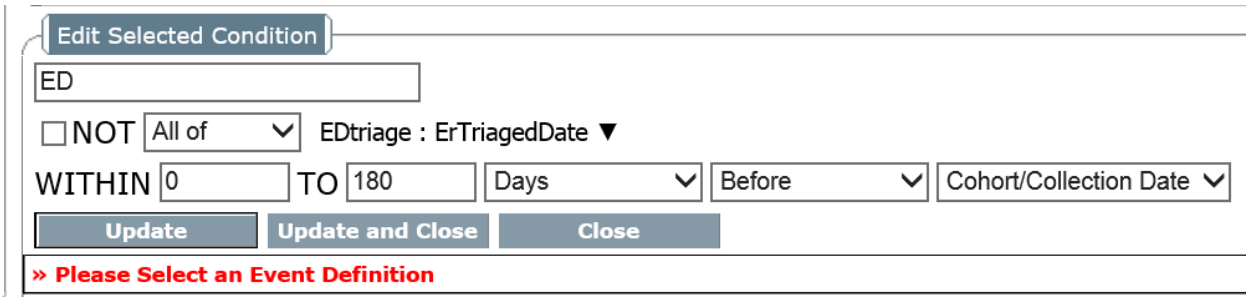
AD for all preceding discharges:

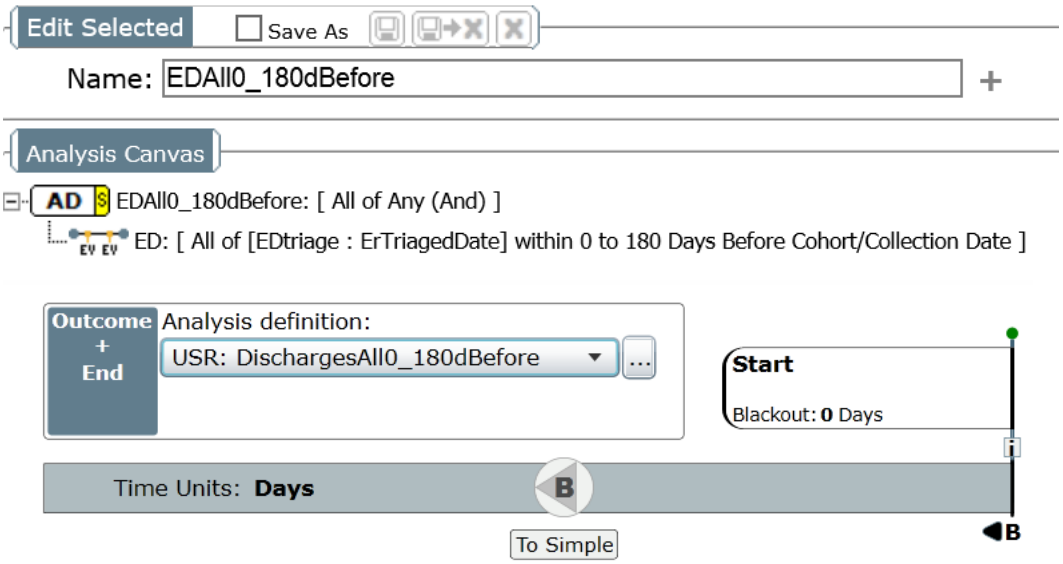


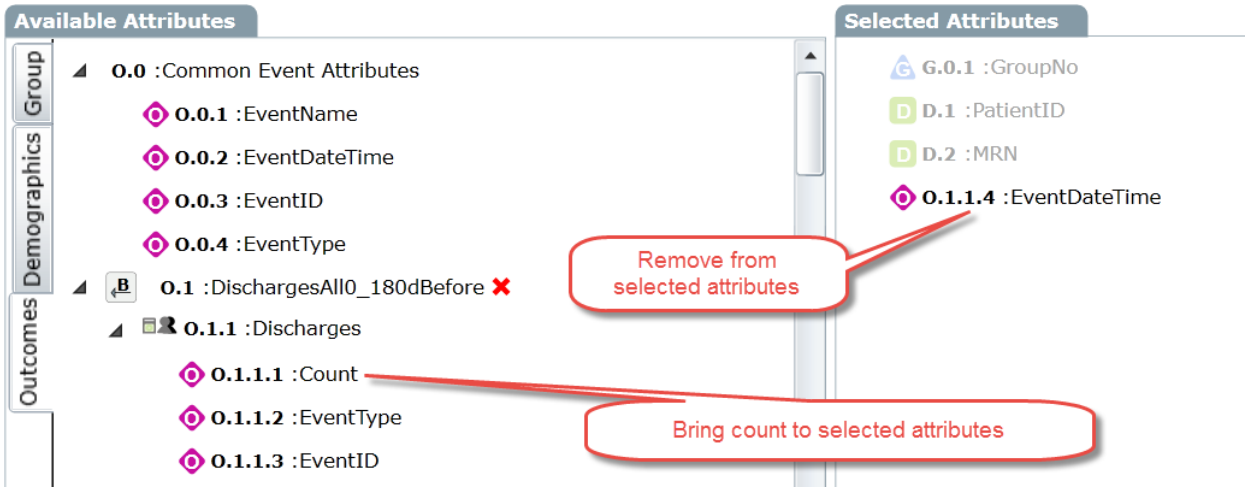

Edit Selected
Save As
Name: DischargesAll0_180dBefore
Analysis Canvas
AD
DischargesAll0_180dBefore: [All of Any (And)]
Discharges: [All of [Discharges : InpatientDischargeDate] within 0 to 180 Days Before Cohort/Collection Date]

Now we also want an AD with ED triage but disposition not admit



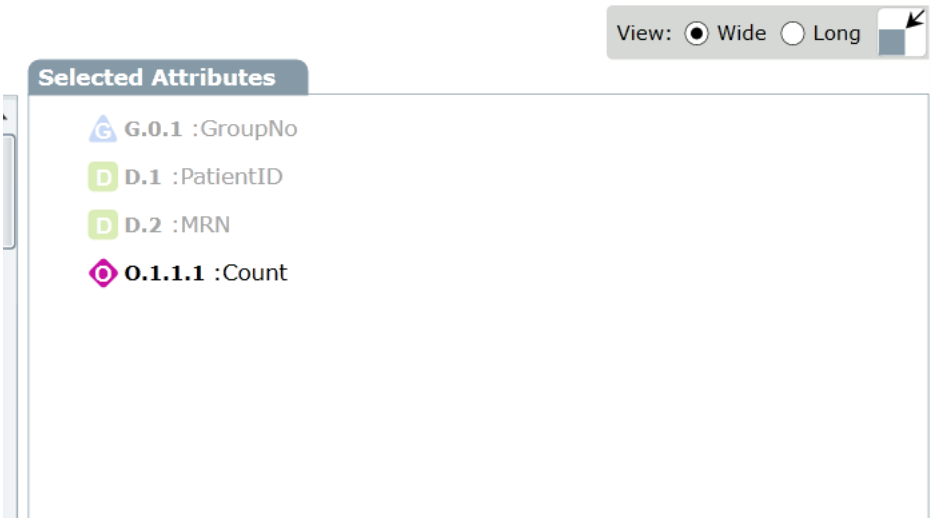






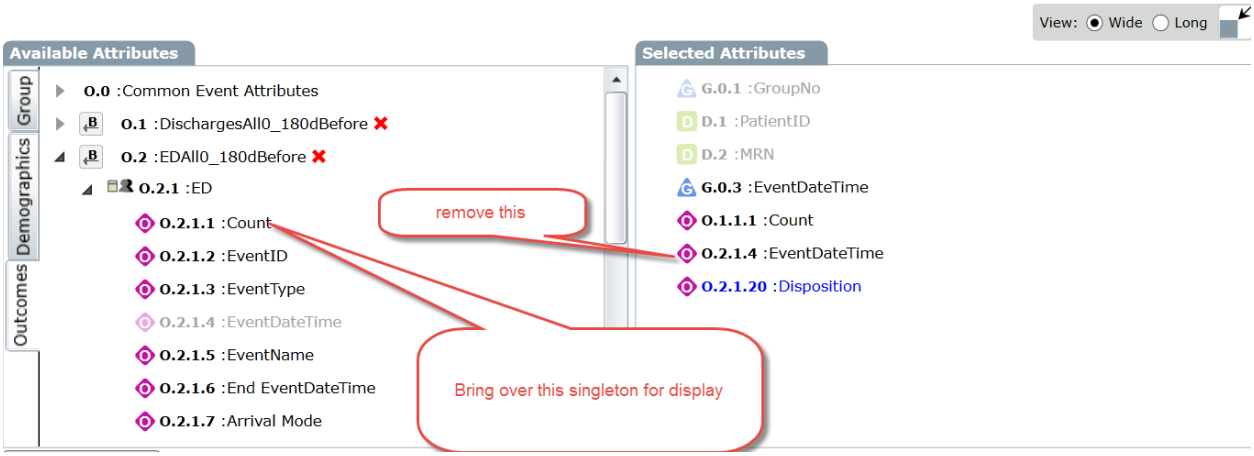
You must remove any variable from outcome event discharges that have a multiplicity. Count is a singleton and can be shown in the wide view. The Event Date Time for each admission is a multiplicity and if kept in the selected attributes would require the use of long view.

The result of these moves is:

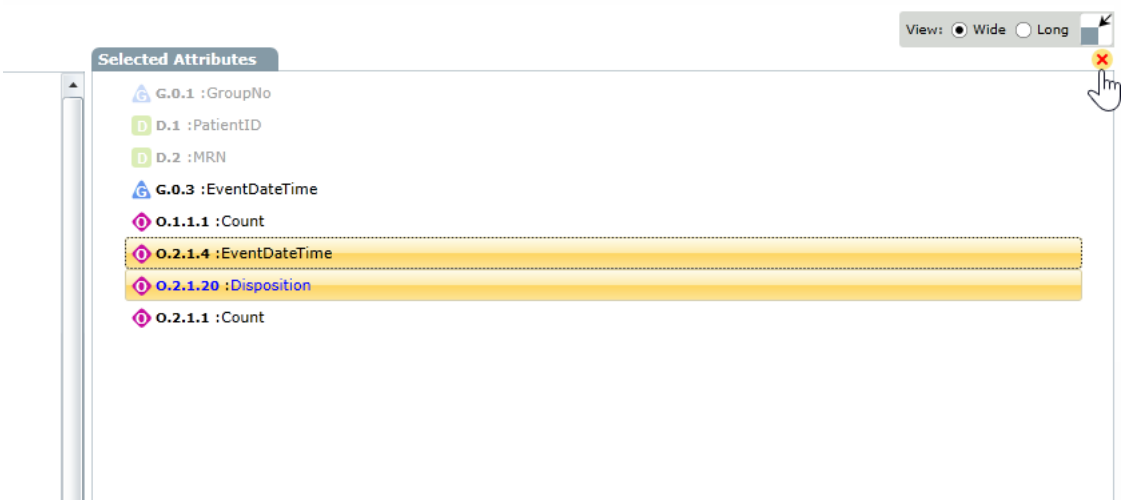


You will now have a spreadsheet with one column for the outcome variable admission and that will be the count of the preceding discharges in the preceding 180 days.

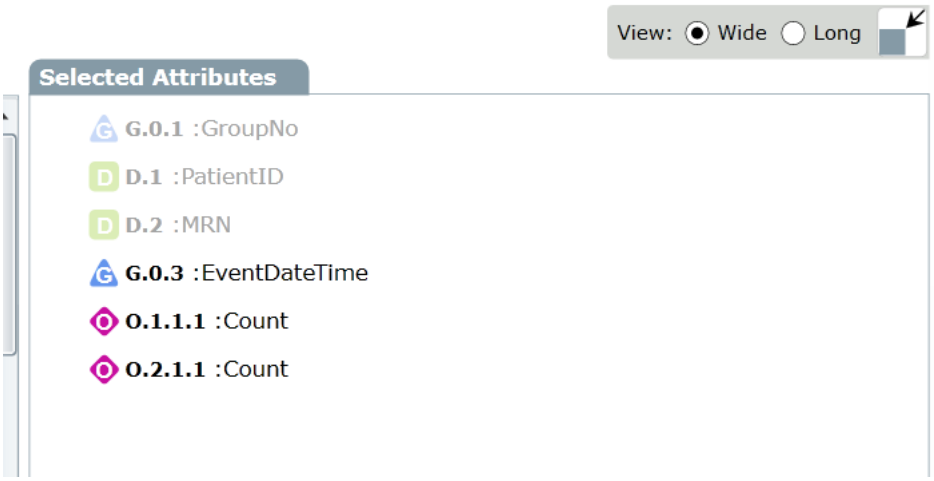
Do the same for ED triage



Remove the multiplicities from the outcomes which include both EventDateTime and Disposition



Resulting in:



Now run in wide view:

DischargesAll0_180dBefore-Discharges-Analysis Instance Count	EDAll0_180dBefore-ED-Analysis Instance Count
0	1
0	0
2	1
0	1
0	0
0	0
1	0
0	0
0	0
2	1
1	1

Now you have a column count for the number of preceding hospitalizations and the number of preceding ED visits that did not result in an admission.

We have answered a practical risk factor for readmission question by getting this baseline information. We were able to use a wide view because all of the attributes in the outcome events were singleton. We did not bring over any dates or individual values, just the overall summary count.

Use of Box for Security

Box creates a virtual drive on your computer. In the configuration we have prepared for you, no information is stored on your hard drive. You merely see an image of a folder and its files.

All information is encrypted in transit and at rest in the cloud.

You can only access the virtual hard drive when you are connected to the internet.

You will be able to access your virtual drive, whenever you have a web browser and a connection to the internet. This means that from any Montefiore computer, you should be able to view all the files you have created in your virtual drive.

This is an experiment to evaluate acceptability of this solution in the workflow of the researcher.

Take the Competency Exam

Rules for test taking. You can help your fellow students by pointing out mistakes and giving hints but do not give answers. CLG is a collaborative tool for a collaborating community

- The “Orders with Text” event

Read CLG User Manual Chapter 11 p. 317-344 text search capability for pathology, radiology (CT, MRI…)

- Read the Table of Contents of Event Manual 3 so you know where to go when you need an event or a specific attribute.

Congratulations on becoming an analytically empowered participant in modern Healthcare.

Steps to Obtain NDI Mortality Data for CLG Users

1. Get an amendment approved from IRB for obtaining mortality data from NDI for research.

2. Visit http://www.cdc.gov/nchs/ndi.htm

They have step by step information and all forms in pdf including the application for getting the data.

3. Get a draft of your application approved by the NDI staff before you submit your final application. (Each request is assigned a particular associate and you deal with that associate directly).

4. The CLG trainer can provide a sample application successfully completed by an Einstein Colleague for reference.

5. They have a Routine query (death yes/no and date of death) and a NDI Plus query (includes cause of death and a copy of death certificate if required).

6. Send an encrypted CD with patient identifiers via overnight mail to CDC.

7. The tricky part is when you get back your results. Depending on how many identifiers you send them they send back results on possible matches. I suggest sending as many identifiers as possible. First and Last name with date of birth is a must. SSN is highly advised. Rest are sex, state of residence, marital status, father's last name (for women) etc.

Note: Social Security number is not available through Clinical Looking Glass even with identifier privilege.

8. If you send fewer identifiers, they send a long list of matches for each individual patient and it might get tricky to identify the exact match. For eg. John Doe born on 01/01/1950 might have 20 possible matches in the NDI database. But John Doe born on 01/01/1950 residing in NY might have only 4 and with SSN it might come down to only 1. Plus, the results are sent back in a notepad free text format and they highly recommend using SAS to write a program to get your proper matches (which I did as well).

9. If you are interested in cause of death, your approved application qualifies you to obtain death certificates too (with the exception of a few states).

10. There is always a lag for the data available. For eg. As of today, 27JUL2015, complete data (including cause of death) is only available until 31DEC2013.

For an example of a completed and approved application, please contact the CLG trainer.

Methods Section for Use in Citing Clinical Looking Glass Work

Purpose: To put in methods section of work citing Looking Glass

Name in manuscripts from 5/14/14 on.

Looking Glass™ Clinical Analytics (Streamline Health, Atlanta, Georgia)

Looking Glass™ Clinical Analytics (Streamline Health, Atlanta, Georgia) is a user-friendly interactive software application for the evaluation of health care quality, effectiveness, and efficiency. The system integrates clinical and administrative datasets allowing non-statisticians to produce epidemiologically cogent self-documenting reports globally assessing care quality while identifying the specific patients in need of clinical remediation.

Company contact info should refer to the headquarters:

Streamline Health

1230 Peachtree St. NE, Suite 1000

Atlanta, GA 30309

www.streamlinehealth.net

(888)-99-STREAM

"Quick Tricks" in Excel for CLG Users

1. Filter your lists: click on upper right hand arrow, can delete additional unneeded information or keep pertinent information by selecting wanted values in the populated list (this is especially useful because simple count data shows up at the bottom of the page)
2. Counts:
    A. how many cells contain a value (or value over a certain number) such as everyone who has received more than one macrolide COUNT IF

    =countif(range, ">2")

    ex:2

    B. If you want to categorize this further, beyond a value count,

    =IF(cell>3, "YES", "")

    ex: greater than 2 = YES

    C. Count the number of non-empty cells in a range (if cells are coded as blank, or have missing values)

    =COUNTA(range)

3. If, then statements:
    A. If you want to know how many values meet, exceed or fall below a criteria, IF THEN

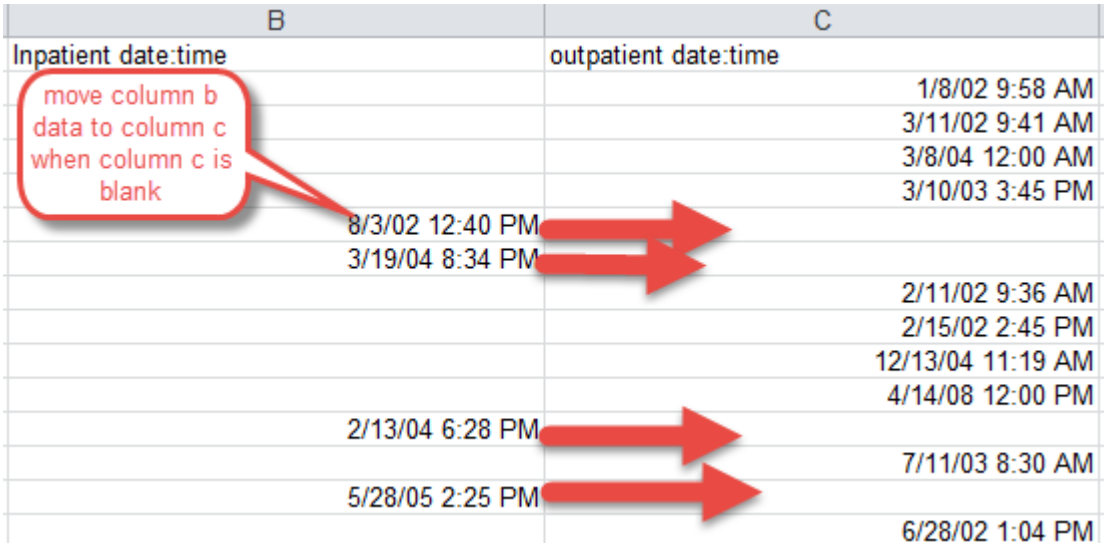
    =IF (cell>=X, "Yes", IF(cell>2, "No",""))

4. Basic formulas:
    A. Sun, min, max, average, st.dev, median, sqrt are all easy functions that can be completed by "=" before the function; you can drag the bottom right hand square across rows or down columns to auto-populate information
    Ex: =sqrt(….)
    Ex: =SUM(…)

    B. Standard error: =stdev(range/sqrt(range))

5. Concatenate:
    1. =CONCATENATE(cell," ", cell)

6. If you have two columns B and C and you have blanks in some of the rows in c that you want filled with the values in B, the following is the process you should follow:
An image of the challenge:



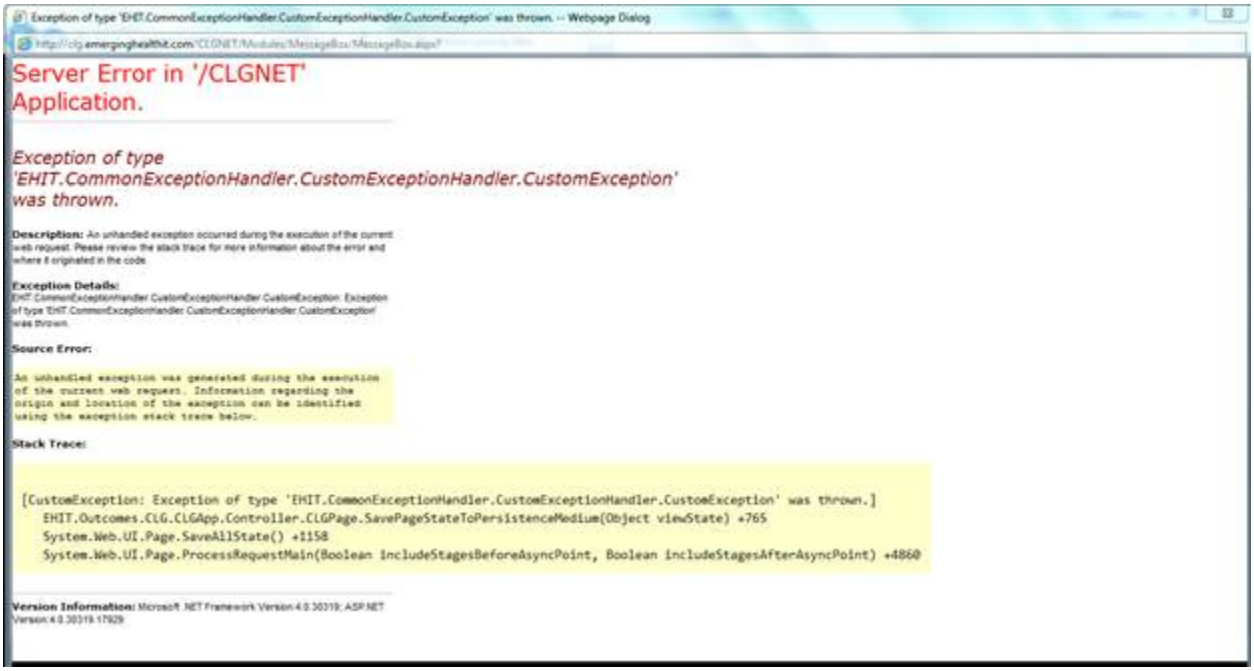
A. Select the whole range of Column C
B. Press control+G (goto)
C. Press button Special
D. Press K (blanks) or select blank from the radial buttons
E. Press Enter (OK)
F. Press the equals sign
G. Press the left arrow on the keyboard
H. Press control +enter

The effect is that all the cells in column C that were blank are filled with the value in column B.. You will have formulas in column C but text values that you can save as a csv.

7. Review how to use Pivot Table capability of Excel.

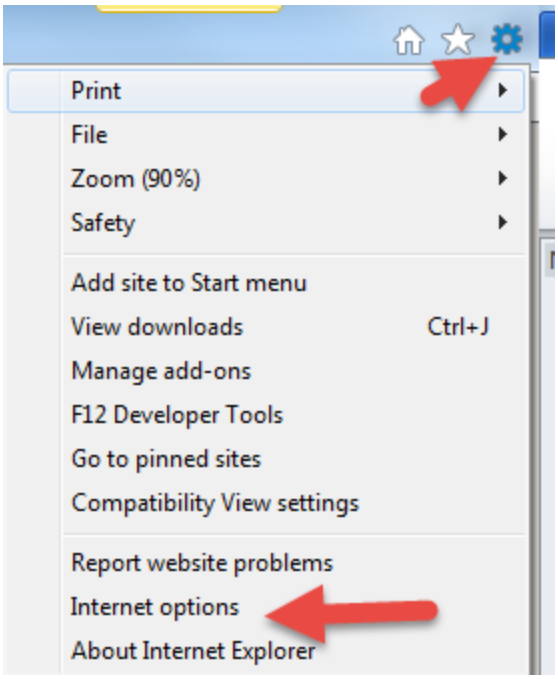
Common CLG Error Message and First Pass Solution

This is a common server error that you may come across during use of CLG:



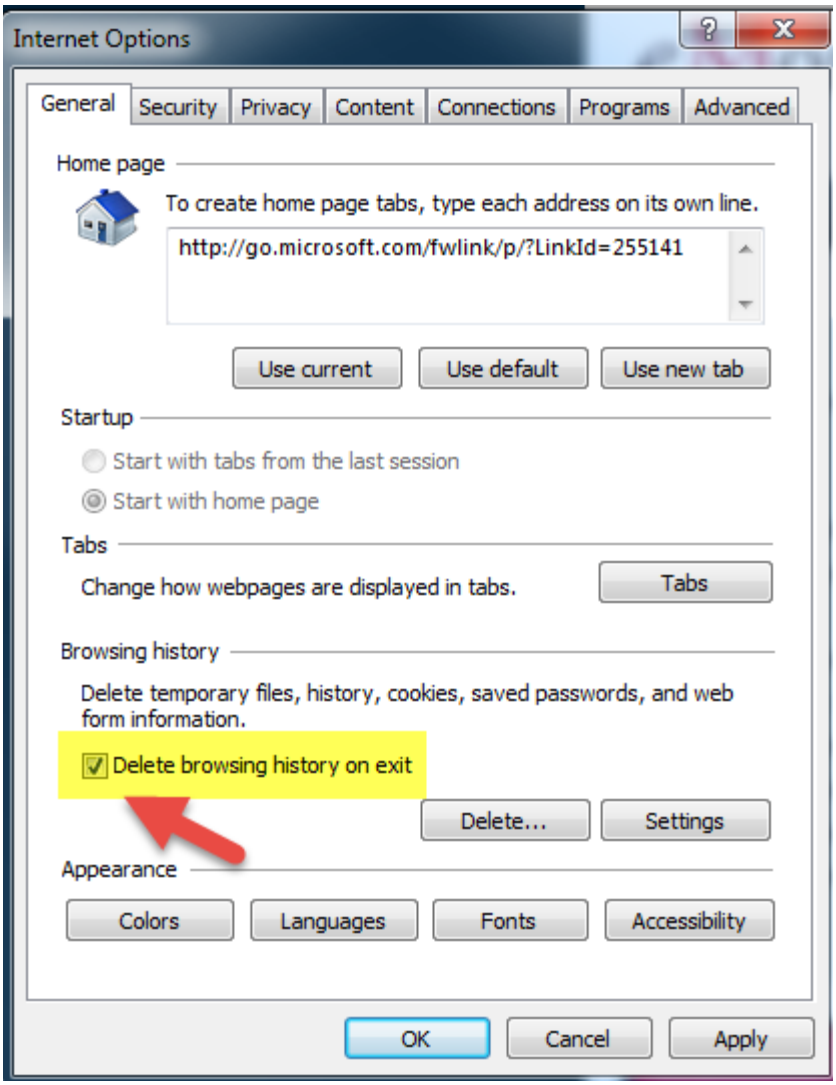
Clearing the Internet Explorer cache and deleting all Internet Explorer browsing history is sometimes sufficient in eliminating the error.

To do this, close out of the current CLG session and any open IE webpages. Re-open internet explorer and left click on the gear button on the upper right corner of your screen:



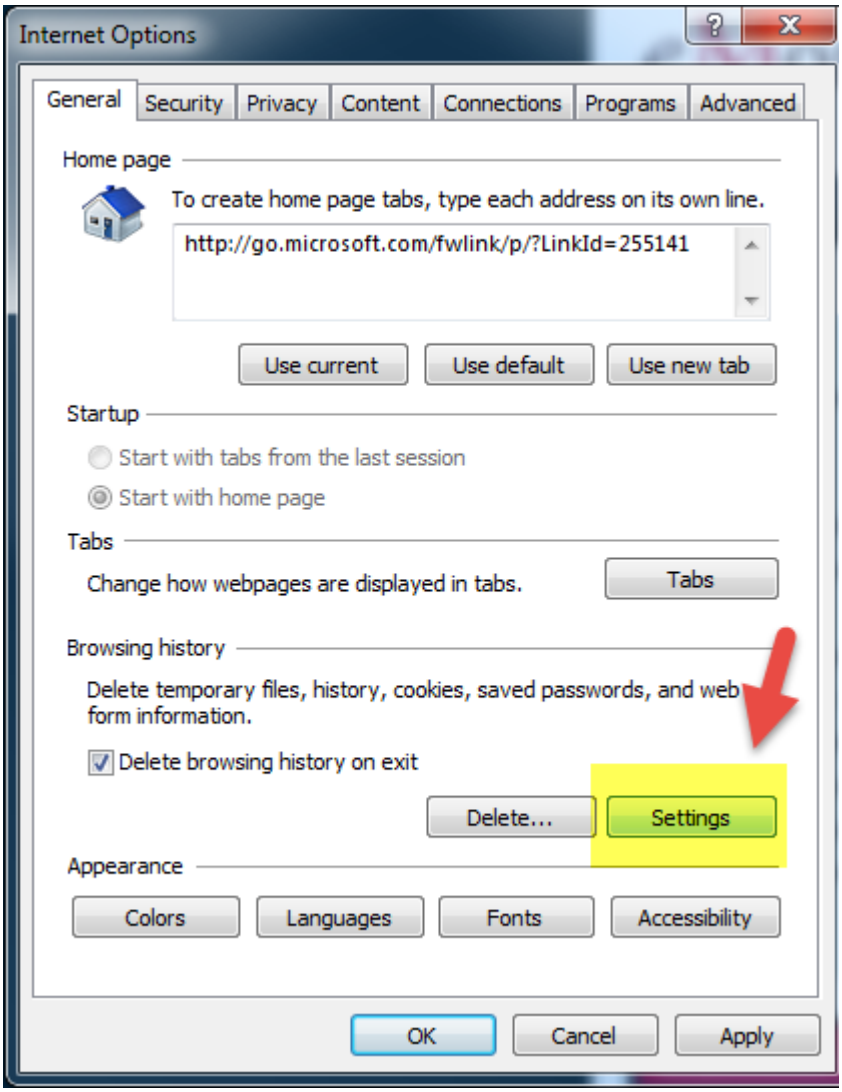
Left click on "Internet options":

An Internet Option palette opens:



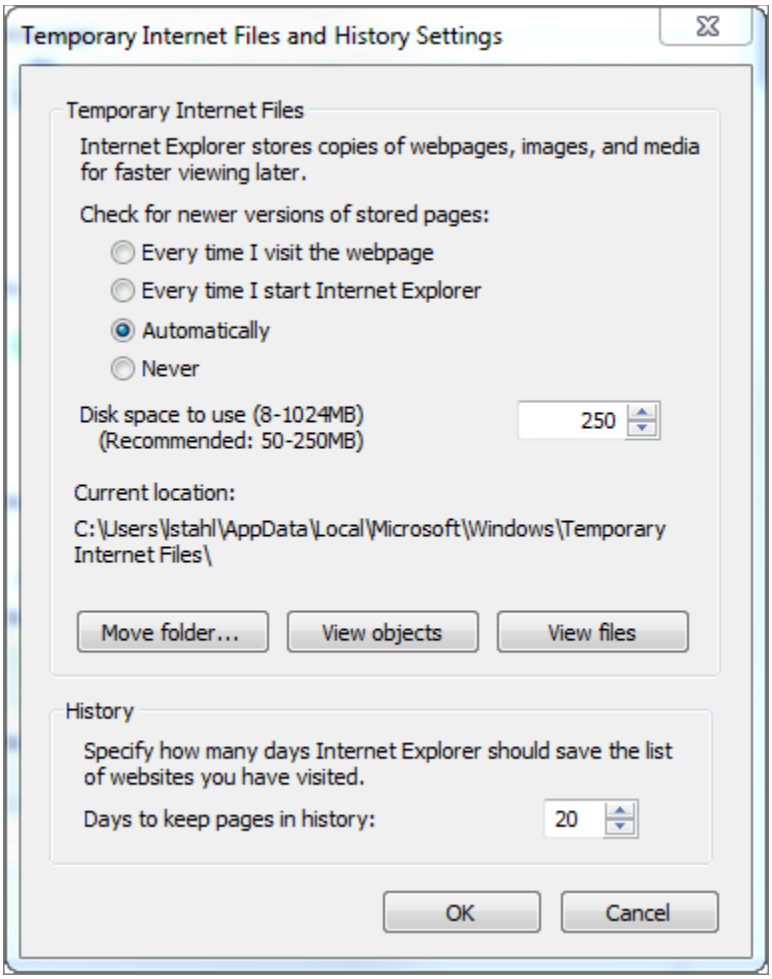
Click on the “General” tab in Internet options and click “Delete browsing history on exit”. Click “Apply” and “OK” when done.

You may also want to update your settings to delete temporary internet files automatically. This is accomplished by clicking “settings”



Which will open the “Temporary Internet Files and History Settings” Palette

and then check “automatically”. Click “OK” when done.


Temporary Internet Files and History Settings
Temporary Internet Files
Internet Explorer stores copies of webpages, images, and media for faster viewing later.
Check for newer versions of stored pages:
Every time I visit the webpage
Every time I start Internet Explorer
Automatically
Never
Disk space to use (8-1024MB)
(Recommended: 50-250MB)
250
Current location:
C:\Users\lstahl\AppData\Local\Microsoft\Windows\Temporary Internet Files\
Move folder...
View objects
View files
History
Specify how many days Internet Explorer should save the list of websites you have visited.
Days to keep pages in history:
20
OK
Cancel

Restart your computer if the same error message appears during your next session in CLG.

If the error message persists even upon computer restart, please contact Ray Gonzalez (raygonza@emerginghealthit.com) with a screenshot of the error message.

A complete or limited CLG server reboot may be needed.